

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LABORATORY TEST PROCEDURE

FOR

FMVSS 403, Platform Lift Systems for Motor Vehicles



ENFORCEMENT
Office of Vehicle Safety Compliance
Room 6111, NVS-220
400 Seventh Street, SW
Washington, DC 20590

OVSC LABORATORY TEST PROCEDURE NO. 403
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REVISION CONTROL LOG FOR OVSC LABORATORY TEST PROCEDURE

TP-403, Platform Lift Systems for Motor Vehicles

TEST PROCEDURE		FMVSS 403		DESCRIPTION
REV. No.	DATE	AMENDMENT	EFFECTIVE DATE	
00	4/1/2005	67FR79416 12/27/02	12/27/04	Final rule
		69FR58843 10/1/04	12/27/04	Final rule – response to petitions for reconsideration.
		69FR76865 12/23/04	4/1/05	Final rule
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1. PURPOSE AND APPLICATION OF LABORATORY TEST PROCEDURE

The Office of Vehicle Safety Compliance (OVSC) provides contractor laboratories with Laboratory Test Procedures as guidelines for obtaining compliance test data. The data are used to determine if a specific vehicle or item of motor vehicle equipment meets the minimum performance requirements of the subject Federal Motor Vehicle Safety Standard (FMVSS). The purpose of the OVSC Laboratory Test Procedures is to present a uniform testing and data recording format, and provide suggestions for the use of specific equipment and procedures. These Laboratory Test Procedures do not constitute an endorsement or recommendation for use of any product or method. If any contractor views any part of an OVSC Laboratory Test Procedure to be in conflict with a Federal Motor Vehicle Safety Standard or observes deficiencies in a Laboratory Test Procedure, the contractor is required to advise the Contracting Officer's Technical Representative (COTR) and resolve the discrepancy prior to the start of compliance testing.

Every contractor is required to submit a detailed test procedure to the COTR before initiating the compliance test program. The procedure must include a step-by-step description of the methodology to be used. The contractor's test procedure shall contain a complete listing of test equipment with make and model number and a detailed check-off sheet. The list of test equipment shall include instrument accuracy and calibration dates. All equipment shall be calibrated in accordance with the manufacturer's instructions. There shall be no contradictions between the Laboratory Test Procedure and the contractor's in-house test procedure. Written approval of the in-house test procedures shall be obtained from the COTR before initiating the compliance test program. The OVSC Laboratory Test Procedures are not intended to limit or restrain a contractor from developing or utilizing any testing techniques or equipment which will assist in procuring the required compliance test data. However, the application of any such testing technique or equipment is subject to prior approval of the COTR.

NOTE: The OVSC Laboratory Test Procedures, prepared for the limited purpose of use by independent laboratories under contract to conduct compliance tests for the OVSC, are not rules, regulations or NHTSA interpretations regarding the meaning of a FMVSS. The Laboratory Test Procedures are not intended to limit the requirements of the applicable FMVSS(s). In some cases, the OVSC Laboratory Test Procedures do not include all of the various FMVSS minimum performance requirements. Recognizing applicable test tolerances, the Laboratory Test Procedures may specify test conditions that are less severe than the minimum requirements of the standard. In addition, the Laboratory Test Procedures may be modified by the OVSC at any time without notice, and the COTR may direct or authorize contractors to deviate from these procedures, as long as the tests are performed in a manner consistent with the standard itself and within the scope of the contract. Laboratory Test Procedures may not be relied upon to create any right or benefit in any person. Therefore, compliance of a vehicle or item of motor vehicle equipment is not necessarily guaranteed if the manufacturer limits its certification tests to those described in the OVSC Laboratory Test Procedures.

2. GENERAL REQUIREMENTS

Federal Motor Vehicle Safety Standard (FMVSS) No. 403 specifies performance requirements for platform lift systems made for installation in motor vehicles. The standard is applicable to platform lifts designed to carry standing passengers who may be aided by canes or walkers, as well as persons seated in wheelchairs, scooters and other mobility aids.

There are separate requirements for Private Use Lifts and Public Use Lifts. Public Use Lifts must meet higher rated load capacities and more stringent requirements than Private Use Lifts. Motor vehicles with a GVWR less than 10,000 pounds must be equipped with a lift that is certified to FMVSS No. 403 for either Public or Private Use. Buses, school buses, and multi-purpose passenger vehicles other than motor homes with a Gross Vehicle Weight Rating (GVWR) greater than 10,000 pounds must be equipped with a lift that is certified to FMVSS No. 403 for Public Use.

Each platform lift must be capable of meeting all of the tests specified in FMVSS No. 403. Certain tests may be performed on a single lift and vehicle combination, such as the Threshold Warning Signal, Edge Guard, and Fatigue Endurance Tests. Other tests may be performed with the lift installed on a test fixture rather than on a vehicle. Attachment hardware may be replaced if damaged by removal and reinstallation of the lift between a test fixture and vehicle.

A related safety standard is FMVSS No. 404. It is applicable to motor vehicles equipped with platform lifts that are manufactured and certified in accordance with FMVSS No. 403. This vehicle standard requires that lifts be installed according to the lift manufacturer's instructions and continue to meet the performance requirements of FMVSS No. 403.

METRIC SYSTEM OF MEASUREMENT

As a general rule, use of the metric system of weights and measures is preferred. Performance parameters and test conditions in FMVSS are now specified in metric units. In this Laboratory Test Procedure metric values may be followed by English units only for reference (not necessarily equal). If test equipment is not available for direct measurement in metric units, the test laboratory shall calculate the exact metric equivalent by means of a conversion factor carried out to at least five significant digits before rounding consistent with the specified metric requirement. Metric units shall be used in the Final Test Reports.

TEST DATA LOSS

A compliance test is not to be conducted unless all of the test conditions specified in this Test Procedure have been met. Failure of a contractor to obtain the required test data or to maintain acceptable limits on test parameters in the manner outlined in this Test Procedure may require a retest at the expense of the contractor. The retest costs will include the cost of a replacement sample and all costs associated with conducting the retest, which may include the cost of an equivalent replacement vehicle and/or platform lift. The original vehicle and/or platform lift used for the invalid test shall remain the property of OVSC, and the retest vehicle and/or platform lift shall remain the property of the contractor. If there is a retest failure, the contractor shall retain the retest vehicle and/or platform lift for at least 180 days. If there is not a retest failure, the contractor may dispose of the retest specimen upon notification from the COTR that the final test report has been accepted.

The NHTSA Contracting Officer is the only person authorized to notify the contractor that a retest is required. The retest shall be conducted within two (2) weeks after receipt of notification by the Contracting Officer that a retest is required. If a retest is conducted, no test report is required for the original test.

3. SECURITY

The contractor shall provide appropriate security measures to protect the OVSC test vehicle and/or platform lift from unauthorized personnel during the entire compliance testing program. The contractor is financially responsible for any acts of theft and/or vandalism which occur during the storage of test vehicles and/or platform lifts. Any security problems which arise shall be reported by telephone to the Industrial Property Manager (IPM), Office of Contracts and Procurement, within two working days after the incident. A letter containing specific details of the security problem shall be sent to the IPM (with copy to the COTR) within 48 hours. The contractor shall protect and segregate the photographs and data that evolve from compliance testing.

No information concerning the vehicle safety compliance testing program shall be released to anyone except the COTR, unless specifically authorized by the COTR or the COTR's Branch or Division Chief.

NOTE: NO INDIVIDUALS, OTHER THAN CONTRACTOR PERSONNEL DIRECTLY INVOLVED IN THE COMPLIANCE TESTING PROGRAM, SHALL BE ALLOWED TO WITNESS ANY VEHICLE AND/OR PLATFORM LIFT COMPLIANCE TEST UNLESS SPECIFICALLY AUTHORIZED BY THE COTR.

4. GOOD HOUSEKEEPING

The contractor shall maintain the indoor compliance testing area, test fixtures and instrumentation in a neat and clean condition with test instruments arranged in an orderly manner consistent with good test laboratory housekeeping practices.

5. TEST SCHEDULING AND MONITORING

The contractor shall submit a test schedule to the COTR prior to testing. Tests shall be completed as required in the contract. Scheduling shall be adjusted to permit sample motor vehicles to be tested to other FMVSS as may be required by the OVSC. All testing shall be coordinated to allow monitoring by the COTR.

6. TEST DATA DISPOSITION

The contractor shall make all vehicle preliminary compliance test data available to the COTR on location within four hours after the test. Final test data, including digital printouts and computer generated plots (if applicable), shall be made available to the COTR within five working days. Additionally, the contractor shall analyze the preliminary test results as directed by the COTR. All backup data sheets, strip charts, recordings, plots, technicians notes, etc., shall be either sent to the COTR or destroyed at the conclusion of each delivery order, purchase order, etc.

7. GOVERNMENT FURNISHED PROPERTY (GFP):

7.1 ACCEPTANCE OF TEST VEHICLES

The contractor has the responsibility of accepting each GFP test vehicle whether delivered by a new vehicle dealership or another vehicle transporter. In both instances, the contractor acts in the OVSC's behalf when signing an acceptance of the test vehicle delivery. When a new GFP vehicle is delivered, the contractor must check to verify the following:

- A. All options listed on the "window sticker" are present,
- B. Tires and wheels are new and the same as listed,
- C. There are no dents or other interior or exterior flaws,
- D. The vehicle has been properly prepared and is in running condition, and
- E. Owner's manual, warranty document, consumer information, and extra set of keys are present.

In addition, if the GFP test vehicle is delivered by a government contracted transporter, the contractor shall check for damage which may have occurred during transit.

A Vehicle Condition form will be supplied to the contractor by the COTR when the test vehicle is transferred from a new vehicle dealership or between test contracts. The contractor must complete a Vehicle Condition form for each vehicle and deliver it to the COTR with the Final Test Report or the report will not be accepted for payment.

7.2 ACCEPTANCE OF PLATFORM LIFT SYSTEMS

All platform lift components shall be inventoried upon receipt and checked against the shipping documents. Any missing, broken, or incorrect parts shall be reported immediately to the COTR. A **running inventory list** shall be maintained until the complete matrix list of test samples is received.

When a lift is received at the laboratory, the contractor is required to verify that it contains the following:

- A. Printed instructions in English for installing the lift, as well as a diagram or schematic depicting proper lift installation.
- B. All attachment hardware necessary for installation of the lift on the chassis of the motor vehicle for which it is intended.
- C. The warranty, owner's manual and any other information available from the manufacturer is included.

If any of these items are missing, the COTR should be notified.

- D. Verify that there is no damage to the lift.

If there is damage, photographs of the damaged areas shall be taken and the COTR shall be notified.

An inventory is required to be made of the number, name, and condition of all GFP received. The test samples are required to be stored in a dry, clean area specifically designated by the Laboratory Project Manager.

Each lift is required to be assigned a laboratory test group number and is required to be tagged with the make, model, and part number.

NOTIFICATION OF COTR

The COTR must be notified within 24 hours after a vehicle platform lift or other GFP equipment has been delivered. In addition, if any discrepancy or damage is found at the time of delivery, a copy of the Vehicle Condition form or equivalent information shall be sent to the COTR immediately via electronic transmittal.

8. CALIBRATION OF TEST INSTRUMENTS

8.1 Before the contractor initiates the safety compliance test program, a test instrumentation calibration system shall be implemented and maintained in accordance with established calibration practices. The calibration system shall include the following as a minimum:

- A. Standards for calibrating the measuring and test equipment will be stored and used under appropriate environmental conditions to assure their accuracy and stability.
- B. All measuring instruments and standards shall be calibrated by the contractor, or a commercial facility, against a higher order standard at periodic intervals NOT TO EXCEED TWELVE (12) MONTHS! Records, showing the calibration traceability to the National Institute of Standards and Technology (NIST), shall be maintained for all measuring and test equipment.
- C. All measuring and test equipment and measuring standards will be labeled with the following information:
 - (1) Date of calibration
 - (2) Date of next scheduled calibration
 - (3) Name of the technician who calibrated the equipment
- D. A written calibration procedure shall be provided by the contractor which includes as a minimum the following information for all measurement and test equipment:
 - (1) Type of equipment, manufacturer, model number, etc.
 - (2) Measurement range
 - (3) Accuracy
 - (4) Calibration interval
 - (5) Type of standard used to calibrate the equipment (calibration traceability of the standard must be evident)

- E. Records of calibration for all test instrumentation shall be kept by the contractor in a manner that assures the maintenance of established calibration schedules. All such records shall be readily available for inspection when requested by the COTR. The calibration system will need the acceptance of the COTR before the test program commences.

8.2 Further guidance is provided in the International Standard ISO 10012-1, “Quality Assurance Requirements for Measuring Equipment” and American National Standard ANSI/NCSL Z540-1, “Calibration Laboratories and Measuring and Test Equipment - General Requirements”.

9. SUGGESTED TEST EQUIPMENT

9.1 General

A. TEST PALLET

A rectangular steel plate of uniform thickness with sides that measure between 660 mm (26 in) and 686 mm (27 in), and weighing 45.4kg (100 pounds) placed underneath the test load, allowing easy movement of test load. ([Figure 11](#))

B. PORTABLE TEST LOAD

Rectangular steel plate(s) of uniform thickness and sides that measure between 533 mm (21 in) and 686 mm (27 in), weighing 45.4kg (100 pounds). ([Figure 10](#))

C. WHEELCHAIR TEST DEVICE

An unloaded power wheelchair, appropriate for a 95th percentile male and has the following dimensions, configuration and components:

- (1) a cross-braced steel frame,
- (2) a sling seat integrated in the frame,
- (3) a belt drive
- (4) detachable footrests, with the lowest point of the footrest adjustable in a range not less than 25 mm (1 in) to 123 mm (5 in) from the ground,
- (5) two pneumatic rear tires with a diameter not less than 495 mm (19.5 in) and not more than 521 mm (20.5 in) inflated to the wheelchair manufacturer’s recommended tire pressure or if no recommendation exists, to the maximum pressure that appears on the sidewall of the tire,

- (6) two pneumatic front tires with a diameter not less than 190 mm (7.5 in) and not more than 216 mm (8.5 in) inflated to the wheelchair manufacturer's recommended tire pressure or if no recommendation exists, to the maximum pressure that appears on the sidewall of the tire,
- (7) a distance between front and rear axles not less than 457 mm (18 in) and not more than 533 mm (21 in),
- (8) a horizontal distance between rear axle and center of gravity not less than 114 mm (4.5 in) and not more than 152 mm (6.0 in),
- (9) a vertical distance between ground and center of gravity not less than 260 mm (10.25 in) and not more than 298 mm (11.75 in),
- (10) a mass not less than 72.5 kg (160 lb) and not more than 86.0 kg (190 lb),
- (11) batteries with a charge not less than 75% of their rated nominal capacity (for tests that require use of the wheelchair's propulsion system)

D. CLEARANCE TEST BLOCK

A block made out of a rigid material, 16 x 16 x 100 mm (0.625 x 0.625 x 4.0 in) with all corners having a 1.6 mm (0.0625 in) radius to measure gaps, transitions and openings. ([Figure 4](#))

E. RIGID BOX FOR DETECTING PLATFORM OCCUPANCY

A rigid box, 152 x 152 x 305 mm (6 x 6 x 12 in) with a weight of 22.7 kg (50 lb) to detect platform occupancy. ([Figure 7](#))

F. TEST FIXTURE

Test fixture with a mounting plate having a width, and floor-to-ground height, similar in size and configuration to a vehicle doorway compatible with the lift manufacturer's specifications. The fixture should have a surface to allow installation of the external switches using the manufacturer's hardware.

G. ILLUMINATION MEASURING DEVICE

A device to measure the illumination in lux (lumen/m²) of the platform lighting on public use lifts, 0-100 lux ±1 lux.

H. LIGHT INTENSITY MEASURING DEVICE

A device to measure the intensity in candela (cd) of the visual threshold warning beacon, and threshold area edge marking.

I. SOUND LEVEL METER

A sound level meter to measure noise level in decibels (dBA) of the audible threshold warning, 30-130 dBA range, Type 2 (+/-2 dBA).

J. ELEVATED TEST PLATFORM FOR WHEELCHAIR TEST RETENTION DEVICE IMPACT TEST

A rectangular, level elevated platform with a guide rail for the wheelchair test device and a lift mounting plate at one end of the platform.

K. TEST SPHERES

1. A sphere, 19 mm \pm 0.2 mm in diameter, to measure gaps
2. A sphere, 13 mm \pm 0.2 mm in diameter, to measure gaps
3. A sphere, 6.5 mm \pm 0.2 mm in diameter, to measure gaps

L. UNOBSTRUCTED PLATFORM OPERATING VOLUME FIXTURE ASSEMBLY

A fixture assembly consisting of an upper and lower portion to simulate a passenger in a wheelchair. The upper portion consists of a set volume, whereas the lower portion is bound in width and height, but varies with the length of the platform. The fixture must be aligned with the geometric center of the platform. To accommodate this alignment, a centrally located tube is placed in the upper and lower portions to provide a visual verification. ([Figure 8](#))

M. INCLINOMETER

A device to determine angular orientation of a surface with a range of 0-360 ° \pm 1°.

N. VELOCITY MEASURING APPARATUS

An apparatus that measures the basis for the vertical and horizontal speed (time and distance) of the platform. The range of measurement shall be 0-500 mm/s (19.6 in/s) \pm 1 mm/s (.039 in/s).

O. ACCELEROMETER

A bi-axial accelerometer with a range of $0.5g \pm 0.05g$ to measure horizontal and vertical acceleration of the platform, filtered with a channel frequency class (CFC) 3 filter meeting the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H=3$ Hz and $F_N=5$ Hz.

9.2 Equipment for Slip Resistance Test

P. DISTILLED WATER AND DEVICE FOR MEASURING QUANTITY

Q. TEST APPARATUS, ANSI/RESNA WC/Vol. 1-1998, sec.13

(1) Fabricate a solid steel test block with a flat bottom surface, 50 mm x 200 mm and 63 mm thick. The radiused end shall be fitted with a ring or similar fastening which will allow the block to be pulled across the test surface with the force acting parallel to the test surface and at a distance 50 mm below the top surface of the block. The mass of the test block and ring with the rubber attached shall be 5 ± 0.05 kg. ([Figure 13](#))

(2) A test rubber sheet ([Figure 13](#)), 50mm x 200 mm and 6 mm thick, shall be attached with contact adhesive to both the planar and the curved bottom surface of the test block. The rubber used for this test shall have the resilience and hardness characteristics specified in Table 1, and checked respectively according to ISO 4662 and ISO 48. It shall have a smooth surface finish. (Suitable rubber known as “Road Research Laboratory Skid Resistance Test Rubber” obtained from Rubber and Plastic Research Association or equivalent)

Table 1 – Resilience and hardness characteristics

Characteristic of test rubber	Temperature, °C				
	0	10	20	30	40
Resilience, %	43 to 49	58 to 65	66 to 73	71 to 77	74 to 79
Hardness, IRHD	55 ± 5				

R. WATERPROOF SILICON CARBIDE PAPER, GRADE P120, WEIGHT D (120 WET AND DRY)

S. FORCE GAUGE

A force gauge with a range of 25N to 100N (5.6 to 22.5 lb), calibrated to an accuracy of $\pm 2\%$ of the reading.

T. MACHINE TO PULL TEST BLOCK

A machine to pull the test block at a rate of 20 ± 2 mm/s. The machine and test block are rigidly linked by a device that exhibits a stiffness greater than or equal to 1×10^5 N/m.

9.3 Equipment for Environmental Resistance Test

U. SALT SPRAY APPARATUS

Salt spray Apparatus, ASTM B117-97 titled “Standard Practice for Operating Salt Spray (Fog) Apparatus,” for testing of attachment hardware and externally mounted platform lifts or components.

V. DETECTION OF CHROMIUM IN STEEL, COATING COMPOSITION

Method of detecting amount of chromium in steel and composition of electrodeposited coating, ASTM B456-95 entitled “Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium”.

W. OPTIONAL TEST JIG FOR EXTERNALLY MOUNTED LIFTS

Optional test jig for externally mounted platform lifts or components (configuration of test setup is such that areas of the lift that would be exposed to the outside environment during actual use are not protected by the salt spray by the test jig).

X. TEST SPHERE

A sphere, $20 \text{ mm} \pm 0.2 \text{ mm}$ in diameter, to measure corrosion spots.

10. IMAGING DOCUMENTATION

The contractor shall use a “real-time” color digital camera with at least 24 frames/second (fps) to record test sequences when specified. All “real-time” photographic coverage required by the test procedure shall be included in the final report.

Each final test report is required to include color digital still photographs (8 x 10 or 8 ½ x 11 inch color photographs focused for clear images). All still photographs required by the test procedure shall be included in the final test report. Photographs of all areas of the lift that may be of importance to the test shall be taken in excess and included in the final test report only if the need arises.

A tag, label, or placard identifying the test item make and model, NHTSA number, and compliance test date are required to appear in each photograph and be legible. As a minimum the following photographs, photocopies, or digital videos are required to be included in the final test report:

General Requirements

1. The lift in the condition it was received (front, rear, and both sides)
2. Certification label
3. Lift installed on test fixture or on vehicle
4. Stowed lift
5. Deployed lift
6. Vehicle floor level loading position
7. Ground level loading position
8. Vehicle owner’s manual insert
 - 8.1. Maintenance schedule
 - 8.2. Lift operating procedures including backup operations

Public Use Lifts

8.3. The statement “DOT-Public Use Lift” on the front cover of insert

8.4. The statement within the insert: “*DOT-Public Use Lift*” verifies that this platform lift meets the “public use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”

Private Use Lifts

8.5. The dimensions that constitute the unobstructed platform operating volume for the lift.

8.6. The manufacturer’s rated load for the lift.

8.7. Information on whether a wheelchair user must back onto the platform from the ground level loading position due to the absence of an inner roll stop.

8.8. The statement “DOT-Private Use Lift” on the front cover of the vehicle owner’s manual insert

8.9. The statement “*DOT-Private Use Lift*” verifies that this platform lift meets only the “private use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, except for buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”

9. Lift Installation Instructions with information identifying:

9.1. The vehicles on which the lift is designed to be installed by make, model, and year, or by specifying the design elements that would make a vehicle an appropriate host for a particular lift, and for which the platform lift manufacturer has certified compliance.

9.2. Procedures for operational checks that the vehicle manufacturer must perform to verify that the lift is fully operational.

9.3. Any informational material or labels that must be placed on or in the vehicle in order to comply with the requirements of this standard. Labels must be of a permanent nature that can withstand the elements of the outside environment.

Public Use Lifts

9.4. The statement “DOT-Public Use Lift” on the front cover of the installation instructions

Private Use Lifts

9.5. The manufacturer’s rated load for the lift and the statement “DOT-Private Use Lift” on the front cover of the installation instructions.

Platform Requirements

10. Inner Roll-Stop
11. Outer Barrier
12. Platform Surface
13. Bridgeplate
14. Threshold area
15. Gap between the inner roll stop and the lift platform (w/ Test Fixture)
16. Horizontal gap over which a passenger may traverse to enter or exit the platform (w/ Test Fixture)
17. Unobstructed Volume (w/Test Fixture)
18. Opening in platform surface (w/Test Fixture)
19. Edges of the platform surface
20. Visible edge of the vehicle floor or bridging device adjacent to the platform lift
21. Designated standing area (if applicable)
22. Lift Platform Outline Markings (Public Only)
23. Lift light(s) (Public Only)
24. Flashing Red Beacon
25. Gap between the outer barrier and the lift platform (w/Test Fixture)
26. Gap between the platform sides and edge guards (w/Test Fixture)
27. Horizontal gap between the platform side and the vehicle structure (w/Test Fixture) if applicable
28. Edge guards
29. Platform Requirements Test failure(s)

Environmental Resistance Test

- 30. Test apparatus
- 31. Lift attachment hardware
- 32. “Upper” attachment hardware
- 33. Attachment hardware ferrous corrosion (w/ Test Fixture)
- 34. Assembled externally mounted lift and all associated attachment hardware.
- 35. Test device location on the threshold area.
- 36. Environmental Resistance Test failure(s)

Wheelchair retention device impact test

- 37. Position of the forward most element of the test device on the platform before forward wheelchair retention impact test
- 38. Position of the test device after forward wheelchair retention impact test
- 39. Position of the rearward most element of the test device on the platform before rearward wheelchair retention impact test
- 40. Position of the test device after rearward wheelchair retention impact test
- 41. Digital video of Wheelchair retention device impact test
- 42. Wheelchair retention device impact test failure(s)

Inner roll stop test

- 43. Pre-test footrest position
- 44. Position of the forward most element of the test device on the platform before forward inner roll stop impact test
- 45. Position of the test device after inner roll stop impact test
- 46. Digital video of Inner roll stop test
- 47. Inner roll stop test failure(s)

Static load test I—working load

- 48. Lift system control (fixed and/or pendant) and control location (Public Only)
- 49. Control panel face(s) including noise level measurement device
- 50. Lift operating instructions
- 51. Digital video of Static load test I—working load
- 52. Static load test I failure(s)

Fatigue endurance test

- 53. Test Load on platform
- 54. Lift cycle counter (if visible)
- 55. Fatigue endurance test failure(s)

Static load test II—proof load

- 56. Test Load on platform
- 57. Digital video of Static load test II—proof load
- 58. Static load test II failure(s)

Handrail test

- 59. Handrails
- 60. Digital video of handrail position with raise/lower operation of lift
- 61. Area location and force application position of first slack take-up load
- 62. Area location and force application position of first load
- 63. Digital video of first force application
- 64. Displacement of handrail (first force application)
- 65. Clearance to vehicle (if applicable)
- 66. Permanent deformation (if applicable)

- 67. Area location and force application position of second slack take-up load
- 68. Area location and force application position of second load
- 69. Digital video of second force application
- 70. Displacement of handrail (second force application)
- 71. Evidence of cracking, separation, or fractures (if applicable)
- 72. Handrail test failure(s)

Wheelchair retention device overload test

- 73. Platform above ground level loading position
- 74. Wheelchair retention device
- 75. Force application
- 76. Evidence of cracking, separation, or fractures (if applicable)
- 77. Digital video of Wheelchair retention device overload test

Static load test III—ultimate load

- 78. Platform at the vehicle floor loading position
- 79. Load application
- 80. Evidence of cracking, separation, or fractures (if applicable)
- 81. Digital video of Static load test III

11. DEFINITIONS

BRIDGING DEVICE

The portion of a platform lift that is a transitional surface between the platform surface and the surface of the vehicle floor within the platform threshold area.

CYCLE

Deploying a platform lift from a stowed position, lowering the lift to the ground level loading position, raising the lift to the vehicle floor loading position, and stowing the lift, including operation of any wheelchair retention device, bridging device, and inner roll stop.

DEPLOY

To move a platform from a stowed position to an extended position or, one of the two loading positions.

To move a wheelchair retention device or inner roll stop to a fully functional position intended to prevent a passenger from disembarking the platform or being pinched between the platform and vehicle.

EXTERNALLY MOUNTED PLATFORM LIFTS

Platform lifts and their components stowed outside the vehicle's occupant compartment and outside other compartments that provide protection from the elements.

FLOOR REFERENCE PLANE

The plane perpendicular to the longitudinal vehicle reference plane for platform lifts that deploy from the side of the vehicle or perpendicular to the transverse vehicle reference plane for platform lifts that deploy from the rear of the vehicle, and tangent to the outermost edge of the vehicle floor surface adjacent to the lift platform. ([Figure 1](#))

GAP

A discontinuity in a plane surface, or between two adjacent surfaces.

GRASPABLE PORTION OF A HANDRAIL

Any portion of a handrail that falls between 30 and 38 inches from the lift platform, and intersects two planes that are perpendicular to the platform reference plane and to the direction of travel of a wheelchair on the lift when entering or exiting the platform. ([Figure 12](#))

INNER ROLL-STOP

A device that is located at the edge of the platform that a passenger or mobility aid must traverse when entering and exiting the platform from the vehicle floor loading position, designed to retain mobility aids on the platform surface during the range of passenger operation.

INTERNALLY MOUNTED PLATFORM LIFTS

Platform lifts and their components stowed in the vehicle's occupant compartment or in other vehicle compartments that provide protection from the elements.

LIFT REFERENCE PLANE

The plane that is defined by two orthogonal axes passing through the geometric center of the platform surface of a platform lift. One axis is perpendicular to the platform reference plane and the other is parallel to the direction of wheelchair travel during loading of the lift. ([Figure 1](#))

LOADING POSITION

A position at which a passenger can either embark or disembark the lift. The two loading positions for the purpose of this test procedure are at vehicle floor and ground level.

LONGITUDINAL VEHICLE REFERENCE PLANE

The plane that is perpendicular to the floor reference plane and contains the longitudinal axis of the vehicle when the vehicle body is level and moves along with the vehicle body in response to the loading of the vehicle suspension. ([Figure 1](#))

OUTER BARRIER

A wheelchair retention device that is located on the edge of the platform, is traversed during ground level loading and unloading, and retains wheelchairs on the platform surface during the range of passenger operation.

PLATFORM

That portion of a platform lift on which the mobility aid or passenger rests while being raised or lowered.

PLATFORM LIFT

A level change device, including any integration of existing vehicle components used to assist persons with limited mobility in entering or exiting a vehicle.

PLATFORM REFERENCE PLANE

A plane tangent to the platform surface at its geometric center. ([Figure 1](#))

PLATFORM SURFACE

The passenger-carrying surface of the lift platform.

PLATFORM THRESHOLD AREA

The rectangular area of the vehicle floor defined by moving a line that lies on the portion of the edge of the vehicle floor directly adjacent to the platform, through a distance of 457 mm (18 inches) across the vehicle floor in a direction perpendicular to the edge. Any portion of a bridging device that lies on this area must be considered part of that area. ([Figure 14](#))

PRIVATE USE LIFT

A platform lift certified to the requirements for private use lifts and requirements in this standard for all lifts.

PUBLIC USE LIFT

A platform lift certified to the requirements for public use lifts and requirements in this standard for all lifts.

RANGE OF PASSENGER OPERATION

The portion of the lift cycle during which the platform is at or between the vehicle floor and ground level loading positions excluding any stow and deploy operations.

STANDARD TEST LOAD

A static load or mass centered on the test pallet such that the total combined mass for public-use lifts shall be 272 kg (600 lb), and the total combined mass for private-use lifts shall be the lift manufacturer's stated rated load or 181 kg (400 lb), whichever is greater.

STOW

A platform's movement from a position within the range of passenger operation to the position maintained during normal vehicle travel

The movement of a wheelchair retention device, bridging device, or inner-roll stop from a fully functional position to a position maintained during normal vehicle travel.

TEST PALLET

A platform on which required test loads are placed for handling and moving. ([Figure 11](#))

TRANSVERSE VEHICLE REFERENCE PLANE

The plane that is perpendicular to the floor reference plane and contains the transverse axis of the vehicle when the vehicle body is level and that moves along with the vehicle body in response to the loading of the vehicle suspension. ([Figure 1](#))

WHEELCHAIR RETENTION DEVICE

A device designed to prevent wheelchairs from leaving the edge of the platform used for ground level loading and unloading during the range of passenger operation.

12. PRETEST REQUIREMENTS

- A. Review all pretest, safety standard performance, and test instrumentation requirements relating to this compliance test. Personnel supervising and/or performing the compliance test shall be thoroughly familiar with all of the requirements.
- B. Review contents of Vehicle owner's manual insert, Lift Installation Instructions, Lift Mounting Kit Instructions, and Operating Instructions provided by the lift manufacturer.
- C. Verify COTR approval of contractor's detailed in-house test procedure.
- D. Verify the calibration status of test equipment.

13. COMPLIANCE TEST EXECUTION

13.1. General Requirements

- 1. Photograph certification label, and note if the lift is Public or Private.
- 2. Verify wording on the certification label is consistent with requirements.
- 3. If the lift is installed upon a vehicle, note the GVWR and type of the vehicle and also the type of lift (e.g. Public or Private) and record in [Data Sheet 1: General Requirements.](#)
- 4. Verify and photograph, photocopy, or digitally scan the specific portions of the Vehicle owner's manual insert that provide specific information about the platform lift and include as part of the compliance test report. This insert must be written in the English language and must include:
 - a. A maintenance schedule that includes maintenance requirements that have, at a minimum, some dependency on the number of cycles on the operations on the lift operations counter.
 - b. Instructions regarding the platform lift operating procedures, including backup operations
 - c. *Public Use Lifts*
 - i. The statement "DOT-Public Use Lift" on the front cover of the vehicle owner's manual insert

- ii. The statement “*DOT-Public Use Lift*” verifies that this platform lift meets the “public use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”

d. *Private Use Lifts*

- i. The dimensions that constitute the unobstructed platform operating volume for the lift. (Record in [Data Sheet 1: General Requirements.](#))
 - ii. The manufacturer’s rated load for the lift. (Record in [Data Sheet 1: General Requirements.](#))
 - iii. Information on whether a wheelchair user must back onto the platform from the ground level loading position due to the absence of an inner roll stop. (Record in [Data Sheet 1: General Requirements.](#))
 - iv. The statement “*DOT-Private Use Lift*” on the front cover of the vehicle owner’s manual insert
 - v. The statement “*DOT-Private Use Lift*” verifies that this platform lift meets only the “private use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, except for buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”
5. Verify and photograph, photocopy, or digitally scan the specific portions of the Lift Installation instructions that provide specific information about the platform lift and include as part of the compliance test report. This insert must be written in the English language and must include:
- a. The vehicles on which the lift is designed to be installed by make, model, and year, or by specifying the design elements that would make a vehicle an appropriate host for a particular lift, and for which the platform lift manufacturer has certified compliance.
 - b. Procedures for operational checks that the vehicle manufacturer must perform to verify that the lift is fully operational. Such checks include, but are not limited to, platform lighting, the threshold-warning signal, and interlocks, including those that interface with vehicle systems.
 - c. Any informational material or labels that must be placed on or in the vehicle in order to comply with the requirements of this standard. Labels must be of a permanent nature that can withstand the elements of the outside environment.

d. *Public Use Lifts*

- i. The statement “DOT-Public Use Lift” on the front cover of the installation instructions

e. *Private Use Lifts*

- i. The manufacturer’s rated load for the lift on the front cover of the installation instructions. (Record in [Data Sheet 1: General Requirements.](#))
- ii. The statement “DOT-Private Use Lift” on the front cover of the installation instructions.

NOTE: Buses, school buses, and MPVs with a GVWR greater than 4,536 kg (10,000 lb.) must be fitted with a public use lift, certified by the manufacturer as meeting the requirements for public use lifts. Motor Homes may be fitted with either a public or private certified lift.

13.2. Platform Requirements

1. Secure the lift in a suitable test fixture, or verify adequate installation within a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Move the platform to the ground level position.
3. Mark the geometric center of the platform, and note in [Data Sheet 2: Platform Requirements.](#)

NOTE: Measurements are made perpendicular to the ground.

4. Measure the vertical surface transition, perpendicular to the threshold area, of any surface a passenger may traverse to enter or exit the platform from the ground. Record the measurement in [Data Sheet 2: Platform Requirements.](#) The measurement may not exceed 6.5 mm (0.25 in), or a test failure has occurred.
5. Measure the slope of any surface a passenger may traverse to enter or exit the platform between 6.5 mm (0.25 in) and 13 mm (0.5 in). Record the measurement in [Data Sheet 2: Platform Requirements.](#) The measurement may not exceed 1:2, or a test failure has occurred.
6. Measure the slope of any surface a passenger may traverse to enter or exit the platform between 13 mm (0.5 in) and 75 mm (3 in). [Data Sheet 2: Platform Requirements.](#) The measurement may not exceed 1:8, or a test failure has occurred. The rise of any sloped surface may not be greater than 75 mm (3 inches), or a test failure has occurred.

7. Verify any horizontal gap over which a passenger may traverse to enter or exit the platform prevents passage of a 13 mm (0.5 inch) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
8. *Public Use Lifts*
 - 8.1. Verify any gap between the inner roll stop and the lift platform prevents passage of the clearance test block ([Figure 4](#)) when its long axis is held perpendicular to the platform reference plane ([Figure 1](#)). Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
 - 8.2. Verify the platform has no protrusions that rise more than 6.5 mm (0.25 inches) above the platform surface.
 - 8.3. If protrusions are suspected of not meeting requirements, measure protrusions perpendicular to the platform surface by a device with its base centered between 50-100 mm (2-4 inches) from the protrusion.
 - 8.4. Record measurements in [Data Sheet 2: Platform Requirements.](#) If a protrusion, except as required for deployment or the wheelchair retention device and inner roll stop, rises greater than 6.5 mm (0.25 inches) above the platform surface, a test failure has occurred.
 - 8.5. Center the Upper and Lower parts of the Unobstructed Volume test fixture ([Figure 8](#)) onto the platform.
 - 8.6. Verify the Unobstructed Volume test fixture is contained within the lift platform. Record findings in [Data Sheet 2: Platform Requirements.](#) If the Unobstructed Volume test fixture cannot be contained within the lift platform, a test failure has occurred. Photograph failure.
 - 8.7. Raise the lift to the vehicle loading level. Verify the Unobstructed Volume test fixture does not contact any other lift component during operation.
 - 8.8. Remove Unobstructed Volume test fixture.
 - 8.9. Verify any opening in that portion of the platform surface that coincides with the unobstructed platform operating volume prevents passage of a 19 mm (0.75 inch) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)

- 8.10 Using an illumination measuring device, verify that all edges of the platform surface, the visible edge of the vehicle floor or bridging device adjacent to the platform lift, and any designated standing area on the lift have outlines of at least 25 mm (1 in) wide and of a color that contrasts with its background by 60 percent determined according to the following equation:

$$\text{Contrast} = 100 \times [(L1 - L2)/L1]$$

Where:

L1 = luminance of the lighter color or shade

L2 = luminance of the darker color or shade

NOTE: Luminance measurements are recorded with the lift in an environment where there is no apparent ambient light, with the sensor portion of the light meter within 50 mm (2 inches) of the surface being measured and with a light meter that has a range comparable to a minimum of 0 to 100 Lux in increments comparable to 1 Lux or less, an accuracy of $\pm 5\%$ of the actual reading and a sampling rate of at least 2 Hz.”

FOR LIFTS WITH LIGHTING EQUIPMENT INSTALLED ONLY

- 8.11. Photograph all edges of the platform surface, the visible edge of the vehicle floor or bridging device adjacent to the platform lift, and any designated standing area.
- 8.12. Move the lift platform to the vehicle floor level.
- 8.13. Set up illumination measuring equipment.
- 8.14. Activate the lift light(s).
- 8.15. Measure the luminance at the points illustrated in [Figure 15](#). Record the luminance in [Data Sheet 2: Platform Requirements](#). If the lift has a light or set of lights that provide less than 22 lm/m² or 22 Lux (2 lm/ft² or 2 foot-candles), measured at the indicated points, a test failure has occurred.
- 8.16. Move the lift platform to the ground loading level.
- 8.17. Measure the luminance at the points illustrated in [Figure 15](#). Record the luminance in [Data Sheet 2: Platform Requirements](#). If the lift has a light or set of lights that provide less than 11 lm/m² or 11 Lux (1 lm/ft² or 1 foot-candles), measured at the indicated points, a test failure has occurred.

NOTE: Points 7-9 are measured from the edge of the lift extents. (i.e. if the lift is equipped with an outer roll stop that doubles as a ramp transition, the measurement is taken 5 cm from the outermost edge of the ramp transition.)

9. *Private Use Lifts*

- 9.11. Verify any gap between the inner roll stop (if equipped) and the lift platform prevents passage of the [clearance test block](#) when its long axis is held perpendicular to the platform reference plane ([Figure 1](#)). Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
- 9.12. Verify the platform has no protrusions that rise more than 13 mm (0.5 in) above the platform surface.
- 9.13. If protrusions are suspected of not meeting requirements, measure protrusions perpendicular to the platform surface by a device with its base centered between 50-100 mm (2-4 in) from the protrusion. Record measurements in [Data Sheet 2: Platform Requirements.](#)
- 9.14. If a protrusion, except as required for deployment or the wheelchair retention device and inner roll stop, rises greater than 13 mm (0.5 in) above the platform surface, a test failure has occurred.
- 9.15. All portions of the sides of a protrusion that are between 6.5 mm (0.25 in) and 13 mm (0.5 in) above the platform must have a slope not greater than 1:2, measured with respect to the platform surface at the location of the protrusion. If the slope measurement is exceeded, a test failure has occurred.
- 9.16. Raise the platform to the vehicle loading position.
- 9.17. Verify any opening in that portion of the platform surface that coincides with the platform operating volume prevents passage of a 19 mm (0.75 in) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
10. Measure the vertical surface transition, perpendicular to the threshold area, of any surface a passenger may traverse to enter or exit the platform from the vehicle floor to the platform. Record the measurement in [Data Sheet 2: Platform Requirements.](#) If the measurement exceeds 6.35 mm (0.25 in), a test failure has occurred.

11. Measure the slope, perpendicular to the platform threshold, of any surface a passenger may traverse to enter or exit the platform between 6.5 mm (0.25 in) and 13 mm (0.5 in). Record the measurement in [Data Sheet 2: Platform Requirements.](#) The measurement may not exceed 1:2, else a test failure has occurred.
12. Measure the slope, perpendicular to the platform threshold, of any surface a passenger may traverse to enter or exit the platform between 13 mm (0.5 in) and 75 mm (3 in). Record the measurement in [Data Sheet 2: Platform Requirements.](#) The measurement may not exceed 1:8, else a test failure has occurred. The rise of any sloped surface may not be greater than 75 mm (3 in), or a test failure has occurred.
13. Verify any gap between the outer barrier and the lift platform prevents passage of the clearance test block ([Figure 4](#)) when its long axis is held perpendicular to the platform reference plane. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
14. Verify any horizontal gap over which a passenger may traverse to enter or exit the platform prevents passage of a 13 mm (0.5 in) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
15. Verify any gap between the platform sides and edge guards that move with the platform prevents passage of a 13 mm (0.5 in) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
16. ***If the lift is installed upon a vehicle, and structures attached to the vehicle are used as edge guards,*** verify the horizontal gap between the platform side and the vehicle structure prevents passage of a 6.5 mm (0.25 in) diameter sphere. Photograph and record this verification in [Data Sheet 2: Platform Requirements.](#)
17. Place an inclinometer about its longitudinal centerline on the vehicle floor, coincident with the platform centerline. Record the angle in [Data Sheet 2: Platform Requirements.](#) Remove the inclinometer.
18. Place the inclinometer about its longitudinal centerline on the platform centerline, tangent with the outermost practicable barrier. Record the angle in [Data Sheet 2: Platform Requirements.](#) Remove the inclinometer.

19. Compare the unloaded platform angle with that of the vehicle floor angle. Record the difference in [Data Sheet 2: Platform Requirements.](#) If the angles differ by more than 1.8°, a test failure has occurred.
20. Move the platform to the ground loading level.
21. Center a standard load, including the test pallet, on the platform surface.
22. Move the loaded platform to the vehicle loading level.
23. Place the inclinometer about its longitudinal centerline on the platform centerline, tangent with the outermost practicable barrier. Record the angle in [Data Sheet 2: Platform Requirements.](#) Remove the inclinometer.
24. Compare the unloaded platform angle with that of the loaded platform angle. Record the difference in [Data Sheet 2: Platform Requirements.](#) If the angles differ by more than 3°, a test failure has occurred.
25. Move the lift platform to the ground level loading position and remove the standard load, including the test pallet.
26. Move the platform lift to the vehicle loading level.
27. Measure the height of edge guards that move with the platform, perpendicular from the platform surface. Record this measurement in [Data Sheet 2: Platform Requirements.](#) If the edge guard height is less than 38 mm (1.5 in) a test failure has occurred.
28. Verify the edge guards are continuous and parallel with the direction of wheelchair movement during loading and unloading. Photograph and record in [Data Sheet 2: Platform Requirements.](#)
29. Measure the distance between the end of the platform, not including portions of an outer roll stop, and the closest parallel face of an edge guard. Record the measurement in [Data Sheet 2: Platform Requirements.](#) If the distance is greater than 75 mm (3 in), then a test failure has occurred.
30. Lower the platform until the edge guards start to release, if so equipped. Measure the vertical distance from the ground to the platform surface. Record this measurement in [Data Sheet 2: Platform Requirements.](#) If the distance is greater than 75 mm (3 in), then a test failure has occurred.

13.3. Interlock Test

1. If lift is installed on a vehicle continue, otherwise proceed to Step 2:
 - 1.1. Verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
 - 1.2. Chock wheels of vehicle, or provide adequate restraint such that the vehicle will be immobile regardless of transmission, braking, or acceleration activity.
 - 1.3. Start the engine of the vehicle.
 - 1.4. Set the parking brake or service brakes by means other than the operator depressing the service brake pedal, and move the shift selector to any forward or reverse position.
 - 1.5. Move the lift “Power” control to the “On” state.
 - 1.6. Attempt to deploy the lift using the lift control. If the lift deploys, a test failure has occurred. Note failure in [Data Sheet 3: Interlock Test.](#)
 - 1.7. Set the transmission to “Park” or “Neutral” and deploy the lift platform to the vehicle loading position.
 - 1.8. Release the brake and attempt to move the shift selector to any forward or reverse position. If the vehicle moves, or is capable of moving if unrestrained, a test failure has occurred. Note failure in [Data Sheet 3: Interlock Test.](#)
 - 1.9. Set the parking brake or service brakes by means other than the operator depressing the service brake pedal, and move the shift selector to the “Park” or “Neutral” Position to activate the lift.
 - 1.10. Stop the engine of the vehicle and remove the key.
 - 1.11. Continue to Step 2.
2. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.

NOTE: For platform lifts designed to be occupied while stowed proceed to Step 2.4

- 2.1. Maneuver the platform to the vehicle floor level loading position.

- 2.2. Place the Rigid Box For Detecting Platform Occupancy ([Figure 7](#)) on its narrowest side on any portion of the lift platform that coincides with the unobstructed platform operating volume.
- 2.3. Attempt to stow the lift using the powered lift controls. If the lift stows, a test failure has occurred. Note failure in [Data Sheet 3: Interlock Test](#).
- 2.4. Remove Rigid Box For Detecting Platform Occupancy from the platform and maneuver the platform to the vehicle floor level loading position.
- 2.5. Position the wheelchair test device on the platform with the rear wheels facing away from the vehicle.
- 2.6. Using the lift control, move the platform down until the inner roll stop starts to deploy.
- 2.7. Stop the lift and note that location. Record location in [Data Sheet 3: Interlock Test](#).
- 2.8. Reposition the platform at the vehicle floor level loading position.
- 2.9. Place one front wheel of the wheelchair test device on the inner roll stop, or along the innermost edge of the platform if the inner roll stop is not accessible.

NOTE: If the platform is too small to maneuver one front wheel on the inner roll stop, two front wheels may be placed on the inner roll stop.

- 2.10. Using the lift control, move the platform down until the inner roll stop starts to deploy.
- 2.11. Determine whether the platform has stopped and whether the inner roll stop has deployed, and measure the vertical distance the wheelchair wheel has risen. Record this data in [Data Sheet 3: Interlock Test](#). If the distance is greater than 13 mm (0.5 in), a test failure has occurred.
- 2.12. Verify the platform does not move up or down if the inner roll stop is not fully deployed. If the platform continues to move without the inner roll stop being fully deployed, a test failure has occurred. Note the failure in [Data Sheet 3: Interlock Test](#).
- 2.13. Maneuver the lift platform to the ground level loading position.

- 2.14. Using the wheelchair test device, place the unloaded wheelchair test device on the platform.
- 2.15. Using the lift control, move the lift up until the outer barrier starts to deploy.
- 2.16. Stop the platform and measure the vertical distance between the ground and the upper platform surface and record in [*Data Sheet 3: Interlock Test*](#). If the vertical distance is greater than 75 mm (3 in), a test failure has occurred.
- 2.17. Maneuver the lift platform to the ground level loading position.
- 2.18. Place one front wheel of the wheelchair test device on any portion of the outer barrier.

NOTE: If the platform is too small to maneuver one front wheel on the outer barrier, two front wheels may be placed on the barrier.

- 2.19. Using the lift control, move the platform up until it stops.
- 2.20. Measure the vertical distance from the ground to the bottom of the wheelchair test device wheel(s), and record [*Data Sheet 3: Interlock Test*](#). If the wheel has upward movement greater than 13 mm (0.5 in), a test failure has occurred.

13.4. Slip resistance test

1. Before the test, prepare the surface of the test rubber by lightly abrading with waterproof silicon carbide paper, grade P120, weight “D” (120 wet and dry).
2. Clean any 450mm x 100mm (17.5 in x 3.94 in) section of the platform with household glass cleaner (ammonia hydroxide solution).

NOTE: No solvents or other cleaning materials are to be used.

3. Wipe the surface clean with a dry cloth or brush.

NOTE: Make certain there is no lint or residue left from the cloth or brush.

4. Prepare the test block ([*Figure 13*](#)) and verify the force gauge is calibrated, and force application machine is calibrated and operational.

NOTE: The pulling force is measured, at a frequency of at least 10 Hz, by a force gauge that has been calibrated to an accuracy of $\pm 2\%$ the reading in the range of 25N to 100N. *Suitable types of force gauges include springs, dial strain gauges and hydraulic gauges.*

5. Rigidly attach the test block to the pulling machine.

NOTE: The machine and test block are rigidly linked by a device that exhibits stiffness greater than or equal to 1×10^5 N/m.

6. Evenly spray 13.5 ml (0.45 oz) of distilled water on the cleaned section of the platform.
7. Begin the test below within 30 seconds of completion the wetting process.
 - 7.1. Pull the test block by a machine at a rate of 20 ± 2 mm/s, for a minimum of 13 seconds.
 - 7.2. Record the average pulling force of the test over the final 10 seconds at a minimum frequency of 10 Hz. Record average pulling force as $F_1 - F_n$ in [Data Sheet 4: Slip Resistance Test](#) for each trial, where n is the number of trials.
 - 7.3. Repeat Steps 7.1 & 7.2, 5 times on any one area of the platform surface, in a single direction. Additional test repetitions may be necessary to obtain a valid pulling force.
 - 7.4. Measure the weight of the test block and record it in [Data Sheet 4: Slip Resistance Test](#) as F_b .
 - 7.5. Calculate the coefficient of friction, μ_p , from the following equation:

$$\mu_p = \frac{F_1 + F_2 + F_3 + \dots F_n}{n \times F_b}$$
 - 7.6. Record calculation in [Data Sheet 4: Slip Resistance Test](#)
8. The coefficient of friction in any direction of any part of the wet platform surface may not be less than 0.65. If the coefficient of friction is less than 0.65, a test failure has occurred. Note the failure in [Data Sheet 4: Slip Resistance Test](#)

13.5. Environmental Resistance Test

1. Is the lift designed to be completely within the occupant compartment when stowed?

If “Yes”, continue, otherwise skip to Step 25

2. Is the lift attachment hardware protected against corrosion by an electrodeposited coating of nickel, or copper and nickel with at least a service condition number of SC1, in accordance with ASTM B456-95, and is not racked for electroplating in locations subjected to maximum stress?

If “No”, continue, otherwise skip to Step 39

3. Prepare and position the lift attachment hardware for the Environmental Resistance Test. The analysis and calibration aspects of the salt spray system shall be in accordance with ASTM Procedure B117-73 titled "Standard Method of Salt Spray (Fog) Testing."
4. Prepare a salt solution by dissolving 5 parts, ± 1 part, of salt by weight in 95 parts of distilled water. The Ph range of the mixture shall be within 6.5 and 7.2.
5. Maintain the compressed air supply to the nozzles between 69 and 172 kN/m² (10 and 25 psig).
6. Organize and photograph all lift attachment hardware designed to attach the lift to a vehicle.
7. Segregate lift attachment hardware designed to be located within the occupant compartment above 20.5 in (the maximum wheel diameter of the wheelchair test device) from the floor, and photograph and identify as “Upper” attachment hardware. **DO NOT MARK THIS HARDWARE**, but rather, take care to maintain separation and positive identification throughout the test.
8. Remove any surface coating or material not intended for permanent retention on the metal lift attachment hardware during service life (e.g. oil, Vaseline[®], any temporary corrosion inhibitor, etc.).
9. Clean the parts suitably, using appropriate chemicals and methods for the lift attachment hardware materials being tested.

NOTE: Parts coated with paints or nonmetallic coatings, need not be cleaned, but also not handled excessively.

10. Unless otherwise specified, the lift attachment hardware shall be supported or suspended between 15 and 30° from the vertical and preferably parallel to the principal direction of flow of fog through the chamber, based upon the dominant surface being tested. Direct the nozzles so that none of the spray can impinge directly on the specimens.
11. The specimens shall not contact each other or any metallic material or any material capable of acting as a wick.
12. Each part shall be placed as to permit free settling of fog on all specimens.
13. Salt solution from one specimen shall not drip on any other specimen.
14. Subject lift attachment hardware to a period of 24 hours of exposure to salt spray.
15. After a period of 24 hours from the beginning of the Environmental Resistance test, remove the lift attachment hardware from the test chamber and let dry under normal laboratory conditions for 1 hour.

NOTE: Upper lift attachment hardware ARE NOT TO BE RETURNED TO THE TEST CHAMBER.

16. Wash any surface of the upper lift attachment exposed to the salt spray thoroughly with water to remove salt, and let dry under laboratory conditions for at least 24 hours.
17. After a drying period of at least 24 hours, visually examine the upper lift attachment hardware for ferrous corrosion. Record findings and photograph significant surfaces in [Data Sheet 5: Environmental Resistance Test](#).
18. If ferrous corrosion is visually confirmed, attempt to contact each surface with ferrous corrosion evident using a 20 mm diameter sphere, and record findings in [Data Sheet 5: Environmental Resistance Test](#) and photograph contact. Contact of a surface with ferrous corrosion using the test sphere constitutes a test failure.
19. Re-position the remainder of the lift attachment hardware in the test chamber and continue with the Environmental Resistance Test for a period of 24 hours of exposure to salt spray.
20. After a period of 24 hours of the Environmental Resistance test, remove the lift attachment hardware from the test chamber and let dry under laboratory conditions for 1 hour.

21. Wash any surface of the internal lift attachment exposed to the salt spray thoroughly with water to remove salt, and let dry under laboratory conditions for at least 24 hours.
22. After a drying period of at least 24 hours, visually examine the internal lift attachment hardware for ferrous corrosion. Record findings in [Data Sheet 5: Environmental Resistance Test](#) and photograph significant surfaces.
23. If ferrous corrosion is visually confirmed, attempt to contact each surface with ferrous corrosion evident using a 20 mm diameter sphere, and record findings in [Data Sheet 5: Environmental Resistance Test](#) and photograph contact. Contact of a surface with ferrous corrosion using the test sphere constitutes a test failure.
24. Secure the lift in a suitable test fixture, or verify adequate installation within a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
25. Prepare and position the externally mounted lift and associated attachment hardware for the Environmental Resistance Test. The analysis and calibration aspects of the salt spray system shall be in accordance with ASTM Procedure B117-73 titled "Standard Method of Salt Spray (Fog) Testing."
26. Prepare a salt solution by dissolving 5 parts, \pm 1 part, of salt by weight in 95 parts of distilled water. The Ph range of the mixture shall be within 6.5 and 7.2.
27. The compressed air supply to the nozzles will be maintained between 69 and 172 kN/m² (10 and 25 psig).
28. Photograph the assembled externally mounted lift and all associated attachment hardware.
29. Remove any surface coating or material not intended for permanent retention on the metal lift components and associated attachment hardware during service life (e.g. oil, Vaseline[®], any temporary corrosion inhibitor, etc.).
30. Clean the lift and associated attachment hardware suitably, using appropriate chemicals and methods for the lift hardware materials being tested.

NOTE: Parts coated with paints or nonmetallic coatings, need not be cleaned, but also not handled excessively.

31. Unless otherwise specified, the lift shall be located preferably +/- 45° to the principal direction of flow of fog through the chamber if installed upon a test jig. Direct the nozzles so that none of the spray can impinge directly on the specimens. If the lift to be tested is mounted to a vehicle, the COTR will determine the optimum configuration to simulate actual outside environmental exposure.
32. The lift and associated attachment hardware shall not contact any metallic material or any material capable of acting as a wick.
33. The lift shall be placed as to permit maximum free settling of fog.
34. Subject the lift and associated attachment hardware to a period of 24 hours of exposure to salt spray.
35. After a period of 24 hours from the beginning of the Environmental Resistance test, remove the lift and associated attachment hardware from the test chamber and let dry under normal laboratory conditions for 1 hour.
36. Wash any surface of the lift and associated attachment hardware exposed to the salt spray thoroughly with water to remove salt, and let dry under laboratory conditions for at least 24 hours.
37. After a drying period of at least 24 hours, visually examine the lift and associated attachment hardware for ferrous corrosion. Record findings in [Data Sheet 5: Environmental Resistance Test](#) and photograph all significant surfaces in the appropriate data sheet.
38. If ferrous corrosion is visually confirmed, attempt to contact each surface with ferrous corrosion evident using a 20 mm diameter sphere, and record findings in [Data Sheet 5: Environmental Resistance Test](#) and photograph contact. Contact of a surface with ferrous corrosion using the test sphere constitutes a test failure.
39. Verify continuing function of the all performance aspects of the lift and associated attachment hardware. Visually record operation function, and note findings in [Data Sheet 5: Environmental Resistance Test](#)
40. End Test

13.6 Threshold warning signal test

1. Verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Maneuver the lift platform to the vehicle floor level loading position.
3. Using the wheelchair test device, place one front wheel of the unloaded wheelchair test device on any portion of the platform threshold area defined in S4 of §571.403 of 49CFR. Photograph test device location on the platform threshold area.
4. Move the platform down until the alarm is actuated.
5. *For Public Use Lifts*
 - 5.1. Verify a Flashing Red Beacon and Audible Alarm.
 - 5.2. Measure the intensity, and frequency of the Flashing Red beacon at a location of 914mm (3ft) above the center of the platform threshold area ([Figure 2](#)) and record the output in [Data Sheet 6: Threshold warning signal test](#). If the intensity is less than 20 candela, or the frequency is less than 1 or more than 2 Hz, a test failure has occurred.
 - 5.3. Verify the Flashing Red Beacon is visible at an inclusive angle of 238° (Maximum level of human peripheral vision plus 15° side to side head movement) measured perpendicular to the platform threshold area center bisecting the transverse plane in an inward direction shown in [Figure 14](#). If the Flashing Red Beacon is not visible within this range, a test failure has occurred.
 - 5.4. Measure the audible alarm intensity and frequency at a location of 914mm (3ft) above the center of the platform threshold area ([Figure 2](#)) and record the output in [Data Sheet 6: Threshold warning signal test](#). If the intensity is less than 85 dBA or the frequency is less than 500 or more than 3000 Hz, a test failure has occurred.
6. *For Private Use Lifts (Other than over the floor lifts)*
 - 6.1. Verify a Flashing Red Beacon or Audible Alarm.
 - 6.2. If the lift is equipped with a Flashing Red Beacon:

6.2.1. Measure the intensity, and frequency of the Flashing Red beacon at a location of 914mm (3ft) above the center of the platform threshold area ([Figure 2](#)) and record the output in [Data Sheet 6: Threshold warning signal test](#). If the intensity is less than 20 candela, or the frequency is less than 1 or more than 2 Hz, a test failure has occurred.

6.2.2. Verify the Flashing Red Beacon is visible at an inclusive angle of 238° (Maximum level of human peripheral vision plus 15° side to side head movement) measured perpendicular to the platform threshold area center bisecting the transverse plane in an inward direction shown in [Figure 14](#). If the Flashing Red Beacon is not visible within this range, a test failure has occurred.

NOTE: If a lift has only a visual alarm and the lift manufacturer specifies that the passenger must load onto the platform a forward direction from the vehicle floor, the Flashing Red Beacon visibility is measured in an outward direction as shown in [Figure 14](#).

6.3. If the lift is equipped with an audible alarm, measure the audible alarm intensity and frequency at a location of 914mm (3ft) above the center of the platform threshold area and record the output in [Data Sheet 6: Threshold warning signal test](#). If the intensity is less than 85 dBA or frequency of less than 500 or more than 3000 Hz, a test failure has occurred.

7. Remove the test wheelchair wheel from the platform threshold area to deactivate the alarm.
8. Measure the vertical distance between the platform and the platform threshold area. Record this distance in [Data Sheet 6: Threshold warning signal test](#). If the distance is greater than 25 mm (1 in), a test failure has occurred.

13.7 Wheelchair retention device impact test

13.7.1 Platform Lifts

NOTE: In the case of private use lifts perform all instructions unless the operating instructions specify a required direction of wheelchair movement onto the platform. When a direction is indicated in the operating instructions, perform steps 6-13 or 15-22, with the test device oriented as required by the operating instructions.

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.

2. Place the lift platform at the vehicle floor loading position.
3. If the wheelchair retention device is an outer barrier, adjust the footrests of the wheelchair test device such that at their lowest point they have a height $25 \text{ mm} \pm 2 \text{ mm}$ ($1 \text{ in} \pm 0.08 \text{ in}$) less than the height of the outer barrier. Record the height of the outer barrier, and footrest, perpendicular to the platform surface, in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
4. If the wheelchair retention device is not an outer barrier, adjust the footrests such that at their lowest point they have a height $50 \text{ mm} \pm 2 \text{ mm}$ ($2 \text{ in} \pm 0.08 \text{ in}$) above the platform. Record this value in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
5. Fully charge the propulsion battery of the test device, and verify a fully functional drive system.
6. Perform speed trials to determine a reliable distance at which the forward speed of the test device will be not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph) under full power. Record these measured distances, with associated speeds in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
7. Position the test device with its plane of symmetry coincident with the lift reference plane and at a distance from the platform sufficient to achieve an unloaded forward impact velocity of not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Photograph and record the position of the forward most element of the test device on the platform, using the deployed wheelchair retention device as a datum, in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
8. Include a means of recording impact speed of the test device within 100 mm (4 in) of the wheelchair retention device.
9. Accelerate the test device onto the platform under its own power such that the test device impacts the wheelchair retention device at not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Digitally video record this event, and submit with the compliance test report. Record the impact speed in [*Data Sheet 7: Wheelchair retention device impact test.*](#)

NOTE: Maintain power to the drive motors until all wheelchair motion has ceased except rotation of the drive wheels.

10. Turn off power to the drive motors.

11. Note and photograph the position of the wheelchair test device after its motion has ceased following the impact, and record in [*Data Sheet 7: Wheelchair retention device impact test.*](#) If all wheels are not contacting the platform surface, after motion has ceased, a test failure has occurred. Note and photograph any test failure in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
12. Move the lift platform to the ground level loading position, stopping once between the two positions. If all wheels are not contacting the platform surface, after motion has ceased, a test failure has occurred. Note and photograph any test failure in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
13. Move the lift platform to the vehicle floor loading position.
14. If necessary, adjust or replace the footrests to restore them to their original condition. Note any adjustments or replacement in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
15. Perform speed trials to determine a reliable distance at which the rearward speed of the test device will be not less than 1.75 m/s (3.9 mph) and not more than 1.85 m/s (4.1 mph) under full power. Record these measured distances, with associated speeds in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
16. Position the test device with its plane of symmetry coincident with the lift reference plane and at a distance from the platform sufficient to achieve an unloaded rearward impact velocity of not less than 1.75 m/s (3.9 mph) and not more than 1.85 m/s (4.1 mph). Photograph and record the position of the rearward most element of the test device on the platform, using the deployed wheelchair retention device as a datum, in [*Data Sheet 7: Wheelchair retention device impact test.*](#)
17. Include a means of recording impact speed of the test device within 100 mm (4 in) of the wheelchair retention device.
18. Accelerate the test device onto the platform under its own power such that the test device impacts the wheelchair retention device at not less than 1.75 m/s (3.9 mph) and not more than 1.85 m/s (4.1 mph). Digitally video record this event, and submit with the compliance test report. Record the impact speed in [*Data Sheet 7: Wheelchair retention device impact test.*](#)

NOTE: Maintain power to the drive motors until all wheelchair motion has ceased except rotation of the drive wheels.

19. Turn off power to the drive motors.

20. Note and photograph the position of the wheelchair test device after its motion has ceased following the impact, and record in [Data Sheet 7: Wheelchair retention device impact test.](#) If all wheels are not contacting the platform surface, after motion has ceased, a test failure has occurred. Note and Photograph any test failure in [Data Sheet 7: Wheelchair retention device impact test.](#)

13.7.2 Rotary Platform Lifts

NOTE: In the case of private use lifts, perform all instructions unless the operating directions specify a required direction of wheelchair movement onto the platform. When a direction is indicated in the operating instructions, perform steps 6-13 or 15-22, with the test device oriented as required by the operating instructions.

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Adjust the test device footrests to the shortest length. Photograph footrest adjustment length, and record in [Data Sheet 7: Wheelchair retention device impact test.](#)
3. Fully charge the propulsion battery of the test device, and verify a fully functional drive system.
4. Position the lift platform surface $90 \text{ mm} \pm 10 \text{ mm}$ ($3.5 \text{ in} \pm 0.4 \text{ in}$) above the ground level loading position. Note the height in [Data Sheet 7: Wheelchair retention device impact test.](#)
5. Perform speed trials to determine a reliable test device control position at which the maximum forward speed of the unloaded, unrestrained test device will be not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Record these measured positions, with associated speeds in [Data Sheet 7: Wheelchair retention device impact test.](#)
6. Position the test device with its plane of symmetry coincident with the lift reference plane and slowly move the test device in the forward direction until it contacts a wheelchair retention device.
7. Activate the test device controller such that, if the test device were unloaded and unrestrained on a flat, level surface, it would achieve a maximum forward speed of not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Digitally video record the event, and include with the compliance test report.

NOTE: Maintain power to the drive motors until all wheelchair motion has ceased except rotation of the drive wheels.

8. Turn off power to the drive motors.
9. Note and photograph the position of the wheelchair after its motion has ceased following the test, and record in [Data Sheet 7: Wheelchair retention device impact test.](#) If all wheels are not contacting the platform surface, after motion has ceased, a test failure has occurred. Note and photograph any test failure in [Data Sheet 7: Wheelchair retention device impact test.](#)
10. If necessary, adjust or replace the footrests to restore them to their original condition. Note any adjustments or replacement in [Data Sheet 7: Wheelchair retention device impact test.](#)
11. Position the lift platform surface $90 \text{ mm} \pm 10 \text{ mm}$ ($3.5 \text{ in} \pm 0.4 \text{ in}$) above the ground level loading position. Note the platform height in [Data Sheet 7: Wheelchair retention device impact test.](#)
12. Perform speed trials to determine a reliable test device control position at which the maximum rearward speed of the unloaded, unrestrained test device will be not less than 1.75 m/s (3.9 mph) and not more than 1.85 m/s (4.1 mph). Record these measured positions, with associated speeds in [Data Sheet 7: Wheelchair retention device impact test.](#)
13. Position the test device with its plane of symmetry coincident with the lift reference plane and slowly move the test device in the rearward direction until it contacts a wheelchair retention device.
14. Activate the test device controller such that, if the test device were unloaded and unrestrained on a flat, level surface, it would achieve a maximum rearward speed of not less than 1.75 m/s (3.9 mph) and not more than 1.85 m/s (4.1 mph). Digitally video record the event, and include with the compliance test report.

NOTE: Maintain power to the drive motors until all wheelchair motion has ceased except rotation of the drive wheels.

15. Turn off power to the drive motors.
16. Note and photograph the position of the wheelchair after its motion has ceased following the test, and record in [Data Sheet 7: Wheelchair retention device impact test.](#) If all wheels are not contacting the platform surface, after motion has ceased, a test failure has occurred. Note and photograph any test failure in [Data Sheet 7: Wheelchair retention device impact test.](#)

13.8 Inner roll stop test (if applicable on private use lifts)

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Place the platform at the ground level loading position, such that the platform is level.
3. Adjust the footrests of the wheelchair test device to the shortest length. Photograph footrest position and record height from the ground in [Data Sheet 8: Inner roll stop test.](#)
4. Fully charge the propulsion battery of the wheelchair test device, and verify a fully functional drive system.
5. Perform speed trials to determine a reliable distance at which the forward speed of the test device will be not less than 1.5 m/s (3.4 mph) and not more than 1.6 m/s (3.6 mph) under full power. Record these measured distances, with associated speeds in [Data Sheet 8: Inner roll stop test.](#)
6. Position the test device with its plane of symmetry coincident with the lift reference plane and at a distance from the platform sufficient to achieve the impact velocity of not less than 1.5 m/s (3.4 mph) and not more than 1.6 m/s (3.6 mph). Photograph and record the position of the forward most element of the test device on the platform, using the deployed inner roll stop as a datum, in [Data Sheet 8: Inner roll stop test.](#)
7. Include a means of recording impact speed of the test device within 100 mm (4 in) of the wheelchair retention device.
8. Accelerate the test device onto the platform under its own power such that the test device impacts the inner roll stop at a speed of not less than 1.5 m/s (3.4 mph) and not more than 1.6 m/s (3.6 mph). Digitally video record this event, and submit with the compliance test report. Record the impact speed in [Data Sheet 8: Inner roll stop test.](#)
9. If the front wheels of the test device pass over the edge of the platform where the inner roll stop is located, a test failure has occurred. Note and photograph any test failure in [Data Sheet 8: Inner roll stop test.](#)
10. If necessary, adjust or replace the footrests to restore them to the condition they were in prior to the impact. Note any adjustments or replacement of footrests in [Data Sheet 8: Inner roll stop test.](#)

11. Perform speed trials to determine a reliable test device control position at which the maximum forward velocity of the unloaded, unrestrained test device will be not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Record these measured positions, with associated speeds in [Data Sheet 8: Inner roll stop test.](#)
12. Position the test device with its plane of symmetry coincident with the lift reference plane and slowly move the test device in the forward direction until it contacts the inner roll stop.
13. Activate the test device controller such that, if the test device were unloaded and unrestrained on a flat, level surface, it would achieve a maximum forward speed of not less than 2.0 m/s (4.4 mph) and not more than 2.1 m/s (4.7 mph). Digitally video record the event, and include with the compliance test report.
14. Maintain control activation and move the lift platform to the vehicle floor loading position. If any portion of the test device is being contacted simultaneously with a portion of the lift platform and any other structure, throughout the lift's range of passenger operation, a test failure has occurred. Note and photograph any test failure in [Data Sheet 8: Inner roll stop test.](#)

13.9 Static load test I—working load

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Fit the lift with data gathering instrumentation to measure and record vertical and horizontal velocities and accelerations at the geometric center of the platform, and the geometric center of the top, horizontal surface of the standard load when upon the lift platform.
3. Verify the control that enables and disables the lift system is labeled as “Power” and has two labeled states, “On” and “Off”, and identified using characters that are at least 2.5 mm (0.1 in) in height. If the lift is not labeled, or labeled otherwise, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
4. Verify an indicator light on the controls illuminates to inform the operator that the lift enabled. If an indicator light is not present, or fails to illuminate, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)

5. Verify the control used to stow the lift is labeled “Stow” or “Fold”, and identified using characters that are at least 2.5 mm (0.1 in) in height. If the lift is not labeled, or labeled otherwise, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
6. Verify the control used to deploy the lift is labeled “Deploy” or “Unfold”, and identified using characters that are at least 2.5 mm (0.1 in) in height. If the lift is not labeled, or labeled otherwise, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
7. Verify the control used to lower the lift is labeled “Down” or “Lower”, and identified using characters that are at least 2.5 mm (0.1 in) in height. If the lift is not labeled, or labeled otherwise, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
8. Verify the control used to raise the lift is labeled “Up” or “Raise”, and identified using characters that are at least 2.5 mm (0.1 in) in height. If the lift is not labeled, or labeled otherwise, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
9. *Public Use Lifts*
 - a. Oriented outward from and perpendicular to the control panel face, photograph the control panel face(s), capturing the lift platform and associated lift components.
 - b. Verify all controls for lift function are positioned together, and a person facing the controls has a direct, unobstructed view of the platform lift passenger, and passenger’s mobility aid, if applicable. If the controls are not positioned together or the view of the lift platform is obstructed, or not within the line of sight, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 - c. Illuminate the vehicle’s headlamps, if installed upon a vehicle, or provide power to the circuit that provides illumination of the lift controls.
 - d. Verify the characters of the lift control identifiers are illuminated. If the characters fail to illuminate, or are incapable of illumination, this constitutes a test failure. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 - e. Extinguish the vehicle’s headlamps, or remove power to the circuit that provides illumination to the lift controls.
10. Photograph lift operating instructions:

- 1) Perpendicular to, and out from the face of the instruction location at a distance such that the wording of the instructions is clear and legible.
 - AND**
 - 2) At an orientation and distance such that the location of the instructions can be referenced from the location of the controls.
11. Verify the lift operating instructions, including backup operations, are located near the controls and all characters have a minimum height of 2.5 mm (0.1 in) and the wording is in English. If no instructions are provided, not near the lift controls, or are not of the character type or language specified, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
- a. *Public Use Lifts*
 - i. Verify the statement “DOT-Public Use Lift” is included within the instructions. If the statement is not present, or not identical, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 - b. *Private Use Lifts*
 - i. Verify the statement “DOT-Private Use Lift” is included within the instructions. If the statement is not present, or not identical, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 - ii. Verify the manufacturer’s stated load is included within the instructions. If the statement is not present, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 - iii. If applicable, verify the instructions indicating that the wheelchair occupant must back onto the lift when loading from the ground are included within the instructions. If the statement is located other than with the lift operating instructions a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
12. Move the “Power” control to the “On” state.
13. Place the platform in the stowed position, releasing the control labeled “stow” or “fold” momentarily between the two positions. If the stowing lift motion cannot be paused between the two positions, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)

14. Deploy the platform to the vehicle floor loading position, releasing the control labeled “deploy” or “unfold” momentarily between the two positions. If the deploying lift motion cannot be paused between the two positions, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)
 - 14.1 While deploying the platform, measure the horizontal and vertical velocity at the geometric center of the platform lift. Record the maximum velocities in [Data Sheet 9: Static load test I—working load.](#) If a velocity exceeds 305 mm (12 in) per second, a test failure has occurred.
 - 14.2 PUBLIC USE LIFTS ONLY: While deploying the platform, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face of the [lift control panel](#) or [pendant control](#); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load.](#) If the noise level exceeds 80 dBA, a test failure has occurred.
15. Center a standard load, including test pallet ([Figure 11](#)) on the platform surface.
16. Lower the lift platform from the vehicle floor loading position to the ground level loading position, releasing the control labeled “lower” or “down” momentarily between the two positions. If the lowering lift motion cannot be paused between the two positions, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)
 - a. While lowering the platform, measure the horizontal and vertical velocities and accelerations at geometric center of the top, horizontal surface of the standard load. Record the maximum velocities and accelerations in [Data Sheet 9: Static load test I—working load.](#) If the velocity exceeds 152 mm (6 in) per second, or the acceleration, when properly filtered (See Note below), exceeds 0.3g (2.94 m/s²), a test failure has occurred.

NOTE: Acceleration measurements are to be filtered with a channel frequency class (CFC) 3 filter. The filter must meet the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H = 3$ Hz and $F_N = 5$ Hz.

- b. PUBLIC USE LIFTS ONLY: While lowering the platform, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face of the [lift control panel](#) or [pendant control](#); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load.](#) If the noise level exceeds 80 dBA, a test failure has occurred.

- c. Using the powered lift controls only, attempt to further lower the platform lift. If the vehicle is raised, or if the lift is capable of raising the test fixture if unrestrained, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)

17. Remove the standard load and test pallet from the lift platform.

18. Raise the lift platform from the ground level loading position to the vehicle floor level loading position, releasing the control labeled “up” or “raise” momentarily between the two positions. If the upward lift motion cannot be paused, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)

- a. While raising the platform, measure the horizontal and vertical velocities and accelerations at the geometric center of the lift platform. Record the maximum velocities and accelerations in [Data Sheet 9: Static load test I—working load.](#) If the velocity exceeds 152 mm (6 in) per second, or the acceleration, when properly filtered, exceeds 0.3g (2.94 m/s²), a test failure has occurred.

NOTE: Acceleration measurements are to be filtered with a channel frequency class (CFC) 3 filter. The filter must meet the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H = 3$ Hz and $F_N = 5$ Hz.

- b. PUBLIC USE LIFTS ONLY: While raising the platform, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face of the lift control panel ([Figure 6](#)) or pendant control ([Figure 5](#)); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load.](#) If the noise level exceeds 80 dBA, a test failure has occurred.

19. Lower the lift platform from the vehicle floor level loading position to the ground level loading position, stopping once between the two positions. If the lift cannot be stopped between the two positions, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load.](#)

- a. While lowering the platform, measure the horizontal and vertical velocities and accelerations at geometric center of the top, horizontal surface of the standard load. Record the maximum velocities and accelerations in [Data Sheet 9: Static load test I—working load.](#) If the velocity exceeds 152 mm (6 in) per second, or the acceleration, when properly filtered (See Note below), exceeds 0.3g (2.94 m/s²), a test failure has occurred.

NOTE: Acceleration measurements are to be filtered with a channel frequency class (CFC) 3 filter. The filter must meet the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H = 3$ Hz and $F_N = 5$ Hz.

- b. PUBLIC USE LIFTS ONLY: While lowering the platform, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face lift control panel ([Figure 6](#)) or pendant control ([Figure 5](#)); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load](#). If the noise level exceeds 80 dBA, a test failure has occurred.

20. Center a standard load, including the test pallet, on the platform surface.

21. Raise the lift platform from the ground level loading position to the vehicle floor loading position, releasing the control labeled “up” or “raise” momentarily between the two positions. If the upward lift motion cannot be paused, a test failure has occurred. Note the failure in [Data Sheet 9: Static load test I—working load](#).

- a. While raising the platform, measure the horizontal and vertical velocities and accelerations at the geometric center of the lift platform. Record the maximum velocities and accelerations in [Data Sheet 9: Static load test I—working load](#). If the velocity exceeds 152 mm (6 in) per second, or the acceleration, when properly filtered, exceeds 0.3g (2.94 m/s²), a test failure has occurred.

NOTE: Acceleration measurements are to be filtered with a channel frequency class (CFC) 3 filter. The filter must meet the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H = 3$ Hz and $F_N = 5$ Hz.

- b. PUBLIC USE LIFTS ONLY: While raising the platform, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face of the lift control panel ([Figure 6](#)) or pendant control ([Figure 5](#)); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load](#). If the noise level exceeds 80 dBA, a test failure has occurred.

22. Remove the standard load and test pallet from the lift platform.

23. Stow the lift.

- a. While stowing the lift, measure the horizontal and vertical velocities and accelerations at the geometric center of the lift platform. Record the maximum velocities and accelerations in [Data Sheet 9: Static load test I—working load.](#) If the velocity exceeds 152 mm (6 in) per second, or the acceleration, when properly filtered, exceeds 0.3g (2.94 m/s²), a test failure has occurred.

NOTE: Acceleration measurements are to be filtered with a channel frequency class (CFC) 3 filter. The filter must meet the requirements of SAE Recommended Practice J211/1, rev. Mar 95, with $F_H = 3$ Hz and $F_N = 5$ Hz.

- b. PUBLIC USE LIFTS ONLY: While stowing the lift, measure the noise level at a location 30.5 mm (12 in) out from the vertical centerline of the face of the lift control panel ([Figure 6](#)) or pendant control ([Figure 5](#)); both if practicable. Record the maximum noise level in [Data Sheet 9: Static load test I—working load.](#) If the noise level exceeds 80 dBA, a test failure has occurred.
24. Using the lift control, deploy the lift. Without deactivating the deploy control, at any moment during the deployment, activate any other lift control other than “Power”. The lift should continue to deploy, or stop. For any other response, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 25. Using the lift control, lower the lift. Without deactivating the lower control, at any moment during the lowering, activate any other lift control other than “Power”. The lift should continue to lower, or stop. For any other response, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 26. Using the lift control, raise the lift. Without deactivating the raise control, at any moment during the raising, activate any other lift control other than “Power”. The lift should continue to rise, or stop. For any other response, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 27. Using the lift control, stow the lift. Without deactivating the stow control, at any moment during the stowing, activate any other lift control other than “Power”. The lift should continue to stow, or stop. For any other response, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 28. Move the “Power” control to the “Off” state.

29. Verify prevention of lift operation, and the indicator light is extinguished. If an indicator light is not extinguished, or the lift continues to be operational, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
 30. Repeat steps 13-18, and 23 using the backup operating mode in accordance with the manufacturer's backup operating instructions. Record operation data in [Data Sheet 9: Static load test I—working load.](#)
 31. Verify the inner roll stop, and wheelchair retention device(s) are manually deployable though all backup operations. If the inner roll stop and wheelchair retention device(s) are not manually deployable through all backup operations, a test failure has occurred. Note failure in [Data Sheet 9: Static load test I—working load.](#)
- 13.10 Fatigue endurance test
1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
 2. Fit a cycle counter, independent from the lift operation counter, as an official record of the number of cycles completed throughout each portion of the test.
 3. Place the lift platform at the ground level loading position.
 4. On a non-contacted surface of the lift platform, orient a data measurement device(s) to continuously record the lift motor(s) temperature(s), and vertical velocity of the platform throughout the test. The platform may not experience a velocity of greater than 305mm (12 in) per second during “stow” and “deploy” operations or a velocity of 152 mm (6 in) per second for all other lift operations, otherwise a test failure has occurred. Photograph and note failures in [Data Sheet 10: Fatigue endurance test.](#)
 5. Center a standard load, including the test pallet ([Figure 11](#)), on the platform surface.
 6. Start the continuous recording of platform velocity.
 7. *Public Use Lifts:*
 - 7.1. Using the lift control, start the raise/lower cycle, and continue in blocks of 10 cycles, pausing for no more than 1 minute between blocks.

- 7.2. Monitor temperature of lift components and adjust cycle pause periods, to a maximum pause of 1 minute, to maintain temperatures below manufacturer specification, or degradation of the lift function.
- 7.3. Continue cycling until 3900 cycles have been performed and verified by the lift operation counter, then stop. If the lift is not equipped with an operation counter that records each complete raise/lower cycle, or the operation counter does not agree with the official test cycle counter, a test failure has occurred. Note the failure in [Data Sheet 10: Fatigue endurance test.](#)
- 7.4. Remove the standard load and test pallet from the platform.
- 7.5. Raise the platform to the vehicle floor loading position.
- 7.6. Start the Stow/Deploy/Lower/Raise, and continue in blocks of 10 cycles, pausing for no more than 1 minute between blocks.

NOTE: Lifts that are designed to stow and deploy manually are not subject to the stow/deploy portion of the test cycle. Repeat 7.1-7.6 in lieu of 7.7-7.12.

- 7.7. Monitor temperature of lift components and adjust cycle pause periods, to a maximum pause of 1 minute, to maintain temperatures below manufacturer specification, or degradation of the lift function.
- 7.8. Continue cycling until 3900 cycles have been performed, then stop.
- 7.9. Move the platform to the ground level loading position.
- 7.10. Repeat steps 7.1-7.9, then continue to step 7.11.
- 7.11. Document evidence of separation, fracture, or breakage of any vehicle or lift component. If any vehicle or lift component separates, fractures, or breaks, stop the test, photograph the evidence, and note failure in [Data Sheet 10: Fatigue endurance test.](#)
- 7.12. End the continuous recording of platform velocity.

8. *Private Use Lifts:*

- 8.1. Using the lift control, start the raise/lower cycle, and continue in blocks of 10 cycles, pausing for no more than 1 minute between blocks.
- 8.2. Monitor temperature of lift components and adjust cycle pause periods, to a maximum pause of 1 minute, to maintain temperatures below manufacturer specification, or degradation of the lift function.

- 8.3. Continue cycling until 1100 cycles have been performed, then stop. If the lift is not equipped with an operation counter that records each complete raise/lower cycle, or the operation counter does not agree with the official test cycle counter, a test failure has occurred. Note the failure in [Data Sheet 10: Fatigue endurance test.](#)
- 8.4. Remove the standard load and test pallet from the platform.
- 8.5. Raise the platform to the vehicle floor loading position.
- 8.6. Start the Stow/Deploy/Lower/Raise, and continue in blocks of 10 cycles, pausing for no more than 1 minute between blocks.

NOTE: Lifts that are designed to stow and deploy manually are not subject to the stow/deploy portion of the test cycle. Repeat 8.1-8.6 in lieu of 8.7-8.12.

- 8.7. Monitor temperature of lift components and adjust cycle pause periods, to a maximum pause of 1 minute, to maintain temperatures below manufacturer specification, or degradation of the lift function.
- 8.8. Continue cycling until 1100 cycles have been performed, then stop.
- 8.9. Move the platform to the ground level loading position.
- 8.10. Repeat steps 8.1-8.9, then continue to step 8.11.
- 8.11. Document evidence of separation, fracture, or breakage of any vehicle or lift component. If any vehicle or lift component separates, fractures, or breaks, stop the test, photograph the evidence, and note failure in [Data Sheet 10: Fatigue endurance test.](#)
- 8.12. End the continuous recording of platform velocity.

13.11 Static load test II—proof load

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.

2. On a non-contacted surface of the lift platform, orient a data measurement device(s) to continuously record the lift motor(s) temperature(s), and vertical velocity of the platform throughout the test. The platform may not experience a velocity of greater than 305mm (12 in) per second during “stow” and “deploy” operations or a velocity of 152 mm (6 in) per second for all other lift operations, otherwise a test failure has occurred. Photograph and note failures in [*Data Sheet 11: Static load test II—proof load.*](#)
3. Place the platform at the vehicle floor level loading position.
4. Center three times the standard load, including the test pallet, on the platform surface.
5. Start the continuous recording of platform velocity.

NOTE: Fully place the pallet on the platform within 1 minute of beginning to place it.

6. Two minutes after fully placing the loaded test pallet on the platform surface, remove the loaded test pallet and examine the platform lift and vehicle for separation, fracture or breakage. If the platform lift or vehicle has evidence of separation, fracture, or breakage; photograph the evidence, a test failure has occurred. Note the failure in [*Data Sheet 11: Static load test II—proof load.*](#)
7. End the continuous recording of platform velocity.
8. Repeat the steps of Static Load Test I, one time. Record data and note failures in [*Data Sheet 11: Static load test II—proof load.*](#)

13.12 Handrail test

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.

NOTE: *Public use lifts MUST have a handrail present on each side of the lift platform meeting the requirements tested below. Private use lifts, if so equipped, MUST have handrails meeting the requirements tested below:*

2. Measure the horizontal extent of the graspable portion of the handrails ([Figure 12](#)). Record the measurement in [Data Sheet 12: Handrail test](#). If the horizontal extent of the handrail is less than 203 mm (8 in) apart, a test failure has occurred. Record the test failure in [Data Sheet 12: Handrail test](#).
3. Measure the height of the graspable portion of the handrail vertically from the platform surface. Record measurement in [Data Sheet 12: Handrail test](#). If the vertical measurement is less than 760 mm (30 in) or more than 965 mm (38 in) above the platform surface, a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test](#).
4. Measure the cross section of the graspable portion of the handrail. Record measurement in [Data Sheet 12: Handrail test](#). If the cross section is less than 31.5 mm (1.25 in) or more than 38 mm (1.5 in) in diameter or width, a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test](#).
5. Measure the radii on any corner. Record the measurement in [Data Sheet 12: Handrail test](#). If the radii of any corner is less than 3.2 mm (0.125 in), a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test](#).
6. Raise and lower the lift platform and verify the position of the handrails relative to the platform does not change. If the handrail position changes relative to the platform surface, a test failure has occurred. Digitally capture the position change, and note failure in [Data Sheet 12: Handrail test](#).
7. Select an area of 1290 mm² (2 in²) on the handrail. Apply 4.4 N (1 lbf) through the area in any direction at any point on the handrail in order to remove any looseness or slack from the handrail structure. Using the platform surface and outermost edge of the platform as reference planes, measure the vertical and horizontal location of the handrail at the 4.4 N (1 lbf) load application point. Photograph and record reference point location in [Data Sheet 12: Handrail test](#).

NOTE: Use of dial indicators, or other precision equipment is necessary to measure displacement of the handrail reference point during the force application.

8. Using a calibrated force application device, apply 445 N (100 lbf) through an area of 1290 mm² (2 in²) in a direction and location opposite to that of the 4.4 N (1 lbf).
9. Record the applied force in [Data Sheet 12: Handrail test.](#) Photograph the area location and force application and note the position in [Data Sheet 12: Handrail test.](#)
10. Attain the force within 1 minute after beginning to apply it.
11. Five seconds after attaining the force:
 - 11.1. Measure the amount of displacement of the handrail relative to the reference point. Record the horizontal and vertical displacement in [Data Sheet 12: Handrail test.](#) If the displacement exceeds 25 mm (1 in), a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test.](#)
 - 11.2. Measure the minimum horizontal distance between the outside of the handrail and the nearest portion of the vehicle if so installed. Record the distance in [Data Sheet 12: Handrail test.](#) If the clearance between each handrail and the nearest portion of the vehicle is less than 38 mm (1.5 in) a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test.](#)
12. Release the 445 N (100 lbf) and reapply the 4.4 N (1 lbf) in the direction and location that it was first applied.
13. Five seconds after attaining the force, measure the position of the handrail with respect to the reference point to determine if there is any permanent deformation of the handrail relative to the platform. If the reference point location has changed by more than 2 mm (0.078 in), permanent deformation is evident, and a test failure has occurred. Photograph the permanent deformation, and note failure in [Data Sheet 12: Handrail test.](#)
14. Apply 1,112 N (250 lbf) through an area of 1,290 mm² (2 in²) in a direction and location opposite to that of the 4.4 N (1 lbf) application.
15. Attain the force within 1 minute after beginning to apply it.
16. Five seconds after attaining the force, measure the amount of displacement of the handrail relative to the reference point. Record the horizontal and vertical displacement in [Data Sheet 12: Handrail test.](#) If the displacement exceeds 100 mm (4 in), a test failure has occurred. Note the failure in [Data Sheet 12: Handrail test.](#)
17. Maintain the force for two minutes.

18. Release the force and inspect the handrail for cracking, separations or fractures and record any findings in [Data Sheet 12: Handrail test.](#) Any evidence of cracking, separation, or fractures is a test failure.

13.13 Wheelchair retention device overload test

1. Secure the lift in a suitable test fixture, or verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. Position the platform surface 89 mm (3.5 in) above the ground level loading position.
3. Wheelchair Retention Device: *Outer Barrier*
 - 3.1. Fit the force application device with a rectangular transference item measuring 25 mm (1 in) in height, and a width spanning the entire barrier.
 - 3.2. Center the rectangular area at a height of 64 mm (2.5 in) above the platform reference plane ([Figure 1](#)).

NOTE: If the bottom edge of the outer barrier falls 50 mm (2 in) or more above the platform reference plane, distribute the force about an axis 13 mm (0.5 in) above the bottom edge of the barrier.

- 3.3. Apply 7,117 N (1,600 lbf) to the wheelchair retention device in a direction parallel to both the platform lift and platform reference planes ([Figure 1](#)).
 - 3.4. Attain the force within 1 minute after beginning to apply it.
 - 3.5. After maintaining the force for two minutes, remove it and examine the wheelchair retention device for separation, fracture or breakage. Note any failures in [Data Sheet 13: Wheelchair retention device overload test.](#)
4. Wheelchair Retention Device: *Non-Outer Barrier*
 - 4.1. Place the test device on the lift platform with its plane of symmetry coincident with the lift reference plane ([Figure 1](#)), and in the direction of travel of a wheelchair on the lift when exiting.
 - 4.2. Fit or apply a means of determining contact with the wheelchair retention device to the test device.
 - 4.3. Move the test device forward until it contacts the wheelchair retention device.

- 4.4. Remove the test device from the platform.
- 4.5. Apply 7,117 N (1,600 lbf) to the wheelchair retention device in a direction parallel to both the platform lift and platform reference planes ([Figure 1](#)), distributed evenly at all areas of the wheelchair retention device that made contact with the test device when it was moved forward.
- 4.6. Attain the force within 1 minute after beginning to apply it.
- 4.7. After maintaining the force for two minutes, remove it and examine the wheelchair retention device for separation, fracture or breakage. Note any failures in [*Data Sheet 13: Wheelchair retention device overload test.*](#)

13.14 Static load test III—ultimate load

1. Verify adequate installation on a vehicle, per manufacturer instructions, such that it performs its intended function throughout all operations.
2. On a non-contacted surface of the lift platform, orient a data measurement device(s) to continuously record the vertical velocity of the platform throughout the test. The platform may not experience a velocity of greater than 305 mm (12 inches) per second otherwise a test failure has occurred. Photograph and note failures in [*Data Sheet 14: Static load test III—ultimate load.*](#)
3. Place the platform at the vehicle floor loading position.
4. Center four times the standard load, including the test pallet ([Figure 11](#)), on the platform surface.

NOTE: Fully place the pallet on the platform within 1 minute of beginning to place it.

5. Start the continuous recording of platform velocity.
6. Two minutes after fully placing the loaded test pallet on the platform surface, remove the loaded test pallet and examine the platform lift and vehicle for separation, fracture or breakage. If the platform lift or vehicle has evidence of separation, fracture, or breakage; photograph the evidence, this constitutes a test failure. Note the failure in [*Data Sheet 14: Static load test III—ultimate load.*](#)
7. End the continuous recording of platform velocity.

14. POST-TEST REQUIREMENTS

The contractor is required to re-verify all instrumentation and check data sheets, photographs, and recorded data. Make sure data is recorded in all data blocks on every compliance test data sheet.

15. REPORTS

15.1. Monthly Status Reports

The contractor is required to submit a monthly Test Status Report and an Equipment Status Report to the COTR. The Equipment Status Report is required to be submitted until all final reports are accepted.

15.2 Apparent Test Failure

Any indication of a test failure is required to be communicated by telephone to the COTR within 24 hours with written notification mailed within 48 hours (Saturdays and Sundays excluded). A Notice of Test Failure with a copy of the particular compliance test data sheet(s) is required to be included.

In the event of a test failure, a post test calibration check of some critically sensitive test equipment and instrumentation may be required for verification of accuracy. The necessity for the calibration shall be at the COTR's discretion and shall be performed without additional costs to the OVSC.

15.3 Final Test Reports

Contractors are required to submit the first Final Test Report in typed draft form within two weeks after the compliance test is conducted. The contractor and the COTR will then be able to discuss the details of both test conduct and report content early in the compliance test program.

Contractors are required to PROOF READ all Final Test Reports before submittal to the COTR. The OVSC will not act as a report quality control office for contractors. Reports containing a significant number of errors will be returned to the contractor for correction, and a "hold" will be placed on invoice payment for the particular test.

15.3.1 Copies

ONE hardcopy and, **ONE** PDF formatted copy of the Final Test Report are required to be submitted to the COTR for acceptance within three weeks of test completion. The Final Test Report format to be used by all contractors can be found in the attachment. Payment of contractor's invoices for completed compliance tests may be withheld until the Final Test Report is accepted by the COTR. Contractors are requested to NOT submit invoices before submitting copies of the Final Test Report.

15.3.2 Requirements

The Final Test Report, associated documentation (including photographs) are relied upon as the chronicle of the compliance test. The Final Test Report will be released to the public domain after review and acceptance by the COTR. For these reasons, each final report must be a complete document capable of standing by itself.

The contractor should use **detailed** descriptions of all compliance test events. Any events that are not directly associated with the standard but are of technical interest should also be included. The contractor should include as much **detail** as possible in the report.

Instructions for the preparation of the first three pages of the final test report are provided below for the purpose of standardization.

15.3.3 First Three Pages

A. FRONT COVER

A heavy paperback cover (or transparency) is required to be provided for the protection of the final report. The information required on the cover is as follows:

- (1) Final Report Number such as 403-ABC-9X-001, where –
 403 is the FMVSS tested
 ABC are the initials for the laboratory
 0X is the Fiscal Year of the test program
 001 is the Group Number (001 for the 1st brand,
 002 for the 2nd brand, etc.)

- (2) Final Report Title And Subtitle such as
 SAFETY COMPLIANCE TESTING FOR FMVSS 403
 Platform Lift Systems
 * * * * *
 Lift Manufacturer
 Model XYZ

- (3) Contractor's Name and Address such as

COMPLIANCE TESTING LABORATORIES, INC.
 4335 West Dearborn Street
 Detroit, Michigan 48090-1234

NOTE: DOT SYMBOL WILL BE PLACED BETWEEN ITEMS (3) AND (4)

- (4) Date of Final Report completion
- (5) The words "FINAL REPORT"
- (6) The sponsoring agency's name and address as follows:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
Room 6111 (NVS-220)
400 Seventh Street, SW
Washington, DC 20590

B. FIRST PAGE AFTER FRONT COVER

A disclaimer statement and an acceptance signature block for the COTR are required to be provided as follows:

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared By: _____

Approved By: _____

Approval Date: _____

FINAL REPORT ACCEPTANCE BY OVSC:

Accepted By: _____

Acceptance Date: _____

C. SECOND PAGE AFTER FRONT COVER

A completed Technical Report Documentation Page (Form DOT F1700.7) is required to be completed for those items that are applicable with the other spaces left blank. Sample data for the applicable block numbers of the title page follows.

Block 1 — REPORT NUMBER

403-ABC-9X-001

Block 2 — GOVERNMENT ACCESSION NUMBER

Leave blank

Block 3 — RECIPIENT'S CATALOG NUMBER

Leave blank

Block 4 — TITLE AND SUBTITLE

Final Report of FMVSS 403 Compliance Testing of Platform Lift Systems
from Lift Manufacturer, Model XYZ

Block 5 — REPORT DATE

March 1, 199X or 200X

Block 6 — PERFORMING ORGANIZATION CODE

ABC

Block 7 — AUTHOR(S)

John Smith, Project Manager / Bill Doe, Project Engineer

Block 8 — PERFORMING ORGANIZATION REPORT NUMBER

ABC-DOT-XXX-001

Block 9 — PERFORMING ORGANIZATION NAME AND ADDRESS

ABC Laboratories
405 Main Street
Detroit, MI 48070-1234

Block 10 — WORK UNIT NUMBER

Leave blank

Block 11 — CONTRACT OR GRANT NUMBER

DTNH22-9X-D-12345

Block 12 — SPONSORING AGENCY NAME AND ADDRESS

U.S. Department of Transportation
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance (NVS-220)
400 Seventh Street, SW, Room 6111
Washington, DC 20590

Block 13 — TYPE OF REPORT AND PERIOD COVERED

Final Test Report
Feb. 15 to Mar. 15, 199X or 200X

Block No. 14--SPONSORING AGENCY CODE

NVS-220

Block 15 — SUPPLEMENTARY NOTES

Leave blank

Block 16 — ABSTRACT

Compliance tests were conducted on Platform Lift Systems from [Lift Manufacturer] in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-403-0X for the determination of FMVSS 403 compliance. Test failures identified were as follows:

None

NOTE: Above wording must be shown with appropriate changes made for a particular compliance test. Any questions should be resolved with the COTR.

Block 17 — KEY WORDS

Compliance Testing
Safety Engineering
FMVSS 403

Block 18 — DISTRIBUTION STATEMENT

Copies of this report are available from —

National Highway Traffic Safety Administration
Technical Information Services
Room PL403 (NPO-405)
400 Seventh Street, SW
Washington, DC 20590
Telephone No.: 202-366-2588

Block 19 — SECURITY CLASSIFICATION OF REPORT

Unclassified

Block 20 — SECURITY CLASSIFICATION OF PAGE

Unclassified

Block 21 — NUMBER OF PAGES

Add appropriate number

Block 22 — PRICE

Leave blank

15.3.4 TABLE OF CONTENTS

Final test report Table of Contents is required to include the following:

Section 1 — Purpose of Compliance Test

Section 2 — Compliance Test Data Summary

Section 3 — Test Data

Section 4 — Test Failure Details (if applicable)

Appendix A — Photographs

Appendix B —Test Equipment List and Calibration Information

One sample of each Compliance Data Sheet is included in this section. More than one copy of a Data Sheet may be needed for a complete compliance test series. Record test data in standard engineering units, determine compliance, and record PASS, FAIL, NA (not applicable), or SEE REMARKS in the spaces provided. Any noncompliance should be explained under REMARKS.

16. DATA SHEETS

Data Sheet 1: General Requirements

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

1. Are the words on the platform lift's certification label consistent with the requirements of FMVSS 403?

☐ YES ☐ NO (fail)

2. Vehicle GVWR (if applicable) _____

3. Vehicle Type (if applicable) _____

4. MY/ MAKE/ MODEL _____

5. Lift Type _____

☐ PUBLIC ☐ PRIVATE

****PRIVATE ONLY****

Does the Vehicle owner's manual insert include:

6. Unobstructed Operating Volume _____ ☐ YES ☐ NO (fail)

7. Manufacturer's rated lift load _____ ☐ YES ☐ NO (fail)

8. Wheelchair backing instructions present w/o inner roll stop?

☐ YES ☐ NO ☐ N/A

9. Does the Lift Installation instructions include the manufacturer's rated load for the lift on the front cover of the instructions? _____

☐ YES ☐ NO (fail)

RECORDED BY: _____ DATE: _____

APPROVED BY: _____ DATE: _____

Data Sheet 2: Platform Requirements

TEST DATE:_____ NHTSA NO.:_____ LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

1. Platform Geometric Center Location (Measured from inward surface of wheelchair retention device and inner edge guard) x: _____ mm y: _____ mm
2. Vertical surface transition: _____ mm
(Record additional measurements on a separate sheet)
3. Slope between 6.5 mm and 13 mm of surface _____
(Record additional measurements on a separate sheet)
4. Slope between 13 mm and 75 mm of surface _____
(Record additional measurements on a separate sheet)

PUBLIC USE LIFTS

5. Do all gaps between the inner roll stop and the lift platform prevent passage of the clearance test block?
☐ YES ☐ NO (fail)
6. Do all horizontal gaps over which a passenger may traverse to enter or exit the platform prevent passage of a 13 mm diameter sphere?
☐ YES ☐ NO (fail)
7. Do all platform protrusions have a height of 6.5 mm or less?
☐ YES ☐ NO (fail)
8. Platform protrusion height (if applicable) _____ mm
☐ YES ☐ NO (fail)
9. Is the Unobstructed Volume test fixture contained within the lift platform?
☐ YES ☐ NO (fail)
10. Are all edges of the platform surface, the visible edge of the vehicle floor or bridging device adjacent to the platform lift and any designated standing area outlined?
☐ YES ☐ NO (fail)
11. Are all outlines at least 25 mm wide?
☐ YES ☐ NO (fail)
12. Do all openings in that portion of the platform surface that coincides with the unobstructed platform operating volume prevent passage of a 19 mm diameter sphere?
☐ YES ☐ NO (fail)

13. Minimum outline width of marked lift and vehicle edges, and any designated operator standing area _____ mm

14. Luminance contrast of outlines and background colors:

- a. Luminance of lighter color: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- b. Luminance of darker color: $L2 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- c. Are the outlines of a color that contrasts with its background by at least 60%

☐ YES ☐ NO (fail)

- d. Contrast = $100 \times [(L1 - L2)/L1]$: _____
FOR LIFTS WITH LIGHTING EQUIPMENT INSTALLED ONLY

15. Platform lighting Luminance test: Vehicle Level

- a. Point 1: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- b. Point 2: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- c. Point 3: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- d. Point 4: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- e. Point 5: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- f. Point 6: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- g. Point 7: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- h. Point 8: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- i. Point 9: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)

16. Platform lighting Luminance test: Ground Level

- a. Point 1: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- b. Point 2: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- c. Point 3: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- d. Point 4: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- e. Point 5: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- f. Point 6: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- g. Point 7: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- h. Point 8: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)
- i. Point 9: $L1 = \underline{\hspace{2cm}}$ Lux (lm/m^2)

PRIVATE USE LIFTS

17. Do all gaps between the inner roll stop and the lift platform prevent passage of the clearance test block? (If applicable)

☐ YES ☐ NO (fail) ☐ N/A

18. Do all horizontal gaps over which a passenger may traverse to enter or exit the platform prevent passage of a 13 mm diameter sphere?

☐ YES ☐ NO (fail)

19. Do all platform protrusions have a height of 13 mm or less?

☐ YES ☐ NO (fail)

20. Platform protrusion height (if applicable) _____ mm

☐ YES ☐ NO (fail)

21. Do all openings in the portion of the platform surface that coincides with the unobstructed platform operating volume prevent passage of a 19 mm diameter sphere?

☐ YES ☐ NO (fail)

22. Do all vertical surface transitions over which a passenger may traverse to enter or exit the platform have a height of 6.5 mm or less?

☐ YES ☐ NO (fail)

23. Threshold vertical surface transition height _____ mm

24. Are all slope measurements 1:2 or less on the portion of the rise between 6.5 mm and 13 mm?

☐ YES ☐ NO (fail)

25. Slope between 6.5 mm and 13 mm of surface over which a passenger may traverse to enter or exit the platform _____

(Record additional measurements on separate sheet)

26. Are all slope measurements 1:8 or less on the portion of the rise between 13 mm and 75 mm?

☐ YES ☐ NO (fail)

27. Slope between 13 mm and 75 mm of surface over which a passenger may traverse to enter or exit the platform _____

(Record additional measurements on a separate sheet)

28. Do all sloped surfaces have a rise of 75 mm or less?

☐ YES ☐ NO (fail)

29. Do all gaps between the outer barrier and the lift platform prevent passage of the clearance test block?

☐ YES ☐ NO (fail)

30. Do all gaps between the platform sides and edge guards which move with the platform prevent passage of a 13 mm diameter sphere?

☐ YES ☐ NO (fail)

31. Do all horizontal gaps between the platform side and the vehicle structure prevent passage of a 6.5 mm diameter sphere? (If Applicable)

☐ YES ☐ NO (fail) ☐ N/A

32. Inclinometer angle on vehicle floor: _____ °

33. Inclinometer angle on lift platform: _____°
34. Difference angle (ABSOLUTE (Vehicle Floor Angle) – ABSOLUTE (Lift Platform Angle) = _____°
35. Is the difference angle 1.8° or less?
☐ YES ☐ NO (fail)
36. Inclinometer angle on **LOADED** lift platform: _____°
37. Difference angle (ABSOLUTE (Vehicle Floor Angle) – ABSOLUTE (**LOADED** Lift Platform Angle) = _____°
38. Is the difference angle 3° or less?
☐ YES ☐ NO (fail)
39. Does the Edge Guard have a minimum height of 3.8 mm?
☐ YES ☐ NO (fail)
40. Edge Guard Height: _____ mm
41. Are all edge guards continuous and parallel with the direction of wheelchair movement during loading and unloading?
☐ YES ☐ NO (fail) ☐ N/A
42. Horizontal distance between end of platform and closest parallel face of an edge guard: _____ mm
43. Is the horizontal distance 75 mm or less?
☐ YES ☐ NO (fail)
44. Vertical distance from the ground to the platform surface at edge guard release (if applicable): _____ mm
45. Is the vertical distance 75 mm or less?
☐ YES ☐ NO (fail)

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

Data Sheet 3: Interlock Test

TEST DATE:_____ NHTSA NO.:_____ LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

LIFT INSTALLED UPON VEHICLE

1. Is the lift immobilized while the vehicle transmission is in any forward or reverse gear?

☐ YES ☐ NO (fail)

If "YES" which forward or reverse gear?: _____

2. Does the vehicle move, or is it capable of moving unrestrained, with the lift deployed to the vehicle floor loading position?

☐ YES (fail) ☐ NO

LIFT INSTALLED UPON FIXTURE

3. Does the lift stow with the test device upon the platform?

☐ YES (fail) ☐ NO ☐ N/A

4. Vertical distance at which the inner roll stop starts to deploy: _____ mm

5. Is the vertical distance greater than 75 mm?

☐ YES (fail) ☐ NO ☐ N/A

6. Vertical distance wheelchair wheel has risen after inner roll-stop deployment has stopped: _____ mm

7. Is the vertical distance greater than 13 mm?

☐ YES (fail) ☐ NO

8. Does the platform continue to move up or down without the inner roll stop fully deployed?

☐ YES (fail) ☐ NO

9. Vertical distance from ground to the bottom of the wheelchair test device wheel(s), at which the outer barrier starts to deploy: _____ mm

10. Vertical distance, from ground to the bottom of the wheelchair test device wheel(s), after outer barrier deployment has stopped: _____ mm

11. Is the vertical distance greater than 13 mm?

☐ YES (fail) ☐ NO

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

Data Sheet 4: Slip Resistance Test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

1. Brand of waterproof silicon carbide paper: _____

2. Brand of ammonia hydroxide solution: _____

FORCE GAUGE INFORMATION

NOTE: The pulling force is measured, at a frequency of at least 10 Hz, by a force gauge that has been calibrated to an accuracy of $\pm 2\%$ the reading in the range of 25N to 100N. *Suitable types of force gauges include springs, dial strain gauges and hydraulic gauges.*

Make: _____; Model: _____; S/N: _____

Type: _____ Calibration Date: _____; Accuracy: _____

Rigid Link Stiffness : _____ N/m

PULL-TEST

Average Pull Force:	Pull Frequency:	Pull Rate:	Pull Time:
F1 = _____ N	_____ Hz	_____ mm/s	_____ s
F2 = _____ N	_____ Hz	_____ mm/s	_____ s
F3 = _____ N	_____ Hz	_____ mm/s	_____ s
F4 = _____ N	_____ Hz	_____ mm/s	_____ s
F5 = _____ N	_____ Hz	_____ mm/s	_____ s
<i>Optional:</i>			
F6 = _____ N	_____ Hz	_____ mm/s	_____ s
F7 = _____ N	_____ Hz	_____ mm/s	_____ s
F8 = _____ N	_____ Hz	_____ mm/s	_____ s
F9 = _____ N	_____ Hz	_____ mm/s	_____ s
F10 = _____ N	_____ Hz	_____ mm/s	_____ s

n= _____ (number of test sequence iterations)

Weight of Test Block (F_b): _____ Kg**CALCULATION OF COEFFICIENT OF FRICTION**

$$\mu_p = \frac{F_1 + F_2 + F_3 + \dots + F_n}{n \times F_b}$$

Coefficient of Friction of Platform Surface;

 $\mu =$ _____

3. Is the coefficient of friction in any direction of any part of the wet platform surface less than 0.65?

☐ YES (fail) ☐ NO

Data Sheet 5: Environmental Resistance Test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

1. Is the lift designed to be completely within the occupant compartment when stowed?

☐ YES ☐ NO ☐ N/A

2. Is the lift attachment hardware protected against corrosion by an electrodeposited coating of nickel, or copper and nickel with at least a service condition number of SC1, in accordance with ASTM B456-95, and is not racked for electroplating in locations subjected to maximum stress?

☐ YES ☐ NO ☐ N/A

LIFT ATTACHMENT HARDWARE SALT SPRAY TEST

Ph range of the mixture: _____; Compressed Air Pressure: _____ KN/m²;

SALT SPRAY EXPOSURE

First Exposure Period: _____ hours

First Drying Period: _____ hours

Second Drying Period: _____ hours

3. Is ferrous corrosion evident on significant surfaces as tested using a 20 mm diameter sphere?

☐ YES (fail) ☐ NO

Second Exposure Period: _____ hours

Third Drying Period: _____ hours

Fourth Drying Period: _____ hours

4. Is ferrous corrosion evident on significant surfaces as tested using a 20 mm diameter sphere?

☐ YES (fail) ☐ NO

EXTERNALLY MOUNTED LIFT SALT SPRAY TEST

Ph range of the mixture: _____; Compressed Air Pressure: _____ KN/m²;

SALT SPRAY EXPOSURE

First Exposure Period: _____ hours

First Drying Period: _____ hours

Second Drying Period: _____ hours

5. Is ferrous corrosion evident on significant surfaces as tested using a 20 mm diameter sphere?

☐ YES (fail) ☐ NO

6. Is ferrous corrosion evident on significant surfaces as tested using 20 mm diameter sphere?

☐ YES (fail) ☐ NO

7. Does the lift maintain continuing function of the all performance aspects of the lift and associated attachment hardware at the conclusion of the salt spray test?

☐ YES ☐ NO (fail)

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

Data Sheet 6: Threshold warning signal test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

LIFT TYPE☐ PUBLIC☐ PRIVATE**AUDIBLE/VISUAL WARNING MEASUREMENT**

Photometer Brand _____; Model: _____

Range: _____ candela Range: _____ Hz

Red Beacon:

Intensity: _____ candela Frequency: _____ Hz

1. Is the Flashing Red Beacon visible at an inclusive angle of 238°?

☐ YES ☐ NO (fail) ☐ N/A

2. Is the intensity of the Flashing Red Beacon less than 20 candela?

☐ YES ☐ NO

3. Is the frequency of the Flashing Red Beacon less than 1 or more than 2 Hz?

☐ YES ☐ NO

Decibel Meter Brand: _____; Model: _____

Range: _____ dBa Range: _____ Hz

Audible Warning:

Intensity: _____ dBa Frequency: _____ Hz

(If so equipped)

4. Is the audible alarm intensity less than 85 dBA?

☐ YES ☐ NO

5. Is the audible alarm frequency less than 500 or more than 3000 Hz?

☐ YES ☐ NO**LIFT HEIGHT MEASUREMENT**

Vertical distance between the platform and the platform threshold area at alarm activation:

_____ mm

6. Is the vertical distance greater than 25 mm?

☐ YES ☐ NO

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

Data Sheet 7: Wheelchair retention device impact test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

LIFT TYPE☐ PUBLIC☐ PRIVATE☐ ROTARY**WHEELCHAIR TEST DEVICE**

Wheelchair Test Device Brand _____; Model: _____

Rear Wheel Diameter: _____ mm Front Wheel Diameter: _____ mm

Wheelbase: _____ mm/in Mass: _____ kg

CGx (from rear axle): _____ mm CGy (from ground): _____ mm

Wheelchair Retention Device Type: _____

Height of Outer Barrier (if applicable): _____ mm

Footrest Adjustment Height (from ground): _____ mm

Describe controller of wheelchair test device and speed control knob:

NOTE: If Rotary Platform Lift, Proceed to "ROTARY LIFT" SectionFORWARD IMPACT TEST**SPEED TRIALS**

S1: _____ m/s	Distance: _____ m
S2: _____ m/s	Distance: _____ m
S3: _____ m/s	Distance: _____ m
S4: _____ m/s	Distance: _____ m
S5: _____ m/s	Distance: _____ m

IMPACT

Impact Test Distance (from deployed wheelchair retention device): _____ m

Impact Test Speed _____ m/s

Impact Test Acceleration _____ m/s²

Position of wheelchair test device after impact:

Failure Notes:

REARWARD IMPACT TEST

SPEED TRIALS

S1: _____ m/s	Distance: _____ m
S2: _____ m/s	Distance: _____ m
S3: _____ m/s	Distance: _____ m
S4: _____ m/s	Distance: _____ m
S5: _____ m/s	Distance: _____ m

IMPACT

Impact Test Distance (from deployed wheelchair retention device): _____ m

Impact Test Speed _____ m/s

Impact Test Acceleration _____ m/s²

Position of wheelchair test device after impact:

Failure Notes:

ROTARY LIFT

FORWARD OVERRIDE TEST

PLATFORM POSITION

Platform height above ground level loading position: _____ mm

Describe controller of wheelchair test device and speed control knob:

SPEED TRIALS

S1: _____ m/s	Controller Position from neutral: _____ mm
S2: _____ m/s	Controller Position from neutral: _____ mm
S3: _____ m/s	Controller Position from neutral: _____ mm
S4: _____ m/s	Controller Position from neutral: _____ mm
S5: _____ m/s	Controller Position from neutral: _____ mm

OVERRIDE TEST

Position of wheelchair test device after test:

Failure Notes:

ROTARY LIFT
REARWARD OVERRIDE TEST

PLATFORM POSITION

Platform height above ground level loading position: _____ mm

SPEED TRIALS

S1: _____ m/s	Controller Position from neutral: _____ mm
S2: _____ m/s	Controller Position from neutral: _____ mm
S3: _____ m/s	Controller Position from neutral: _____ mm
S4: _____ m/s	Controller Position from neutral: _____ mm
S5: _____ m/s	Controller Position from neutral: _____ mm

OVERRIDE TEST

Position of wheelchair test device after test:

Failure Notes:

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

.

Data Sheet 8: Inner roll stop test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

WHEELCHAIR TEST DEVICE

Wheelchair Test Device Brand _____; Model: _____

Rear Wheel Diameter: _____ mm Front Wheel Diameter: _____ mm

Wheelbase: _____ mm Mass: _____ kg

CGx (from rear axle): _____ mm CGy (from ground): _____ mm

Wheelchair Retention Device Type: _____

Height of Inner Roll Stop (from platform): _____ mm

Footrest Adjustment Height (from ground): _____ mm

FORWARD IMPACT TEST**SPEED TRIALS**

S1: _____ m/s Distance: _____ m

S2: _____ m/s Distance: _____ m

S3: _____ m/s Distance: _____ m

S4: _____ m/s Distance: _____ m

S5: _____ m/s Distance: _____ m

IMPACT

Impact Test Distance (from deployed wheelchair retention device): _____ m

Impact Test Speed _____ m/s

Impact Test Acceleration _____ m/s²**Position of wheelchair test device after impact:**

Failure Notes:

FORWARD OVERRIDE TEST

Footrest Adjustment Height (from ground): _____ mm

SPEED TRIALS

S1: _____ m/s	Controller Position from neutral: _____ mm
S2: _____ m/s	Controller Position from neutral: _____ mm
S3: _____ m/s	Controller Position from neutral: _____ mm
S4: _____ m/s	Controller Position from neutral: _____ mm
S5: _____ m/s	Controller Position from neutral: _____ mm

OVERRIDE TEST

Position of wheelchair test device after test:

Failure Notes:

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

.

Data Sheet 9: Static load test I—working load

TEST DATE:_____ NHTSA NO.:_____ LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

ALL LIFTS**CONTROLS**

1. Is the control that enables and disables the lift system labeled as “Power”?
☐ YES ☐ NO (fail)
2. Does the control have two labeled states, “On” and “Off”?
☐ YES ☐ NO (fail)
3. Does an indicator light on the controls illuminate to inform the operator that the lift enabled?
☐ YES ☐ NO (fail)
4. Is the control used to stow the lift labeled “Stow” or “Fold”?
☐ YES ☐ NO (fail) ☐ N/A
5. Is the control used to deploy the lift labeled as “Deploy” or “Unfold”?
☐ YES ☐ NO (fail) ☐ N/A
6. Is the control used to lower the lift labeled as “Down” or “Lower”?
☐ YES ☐ NO (fail)
7. Is the control used to raise the lift labeled as “Up” or “Raise”?
☐ YES ☐ NO (fail)
8. Are all functions identified using characters that are at least 2.5 mm (0.1 in) in height?
☐ YES ☐ NO (fail)
9. Are all lift operating instructions, including backup operations, located near the controls?
☐ YES ☐ NO (fail)
10. Is the lift prevented from operating, and power indicator light extinguished when the power is switch off?
☐ YES ☐ NO (fail)
11. Are the inner roll stop, and wheelchair retention device(s) manually deployable though all backup operations?
☐ YES ☐ NO (fail)

PUBLIC LIFTS**CONTROLS & IDENTIFIERS**

12. Are all controls for lift function positioned together, and a person facing the controls has a direct, unobstructed view of the platform lift passenger, and passenger’s mobility aid, if applicable?
☐ YES ☐ NO (fail)

13. Do the characters of the lift control identifiers illuminate when the vehicle's headlights are illuminated, or power is supplied to the illumination circuit?

☐ YES ☐ NO (fail)

14. Is the statement "DOT-Public Use Lift" included within the lift operating instructions?

☐ YES ☐ NO (fail)

PRIVATE LIFTS

CONTROLS & IDENTIFIERS

15. Is the statement "DOT-Private Use Lift" included within the lift operating instructions?

☐ YES ☐ NO (fail)

16. Is the manufacturer's stated load included within the lift operating instructions?

☐ YES ☐ NO (fail)

17. If applicable, are the instructions indicating that the wheelchair occupant must back onto the lift when loading from the ground included within the lift operating instructions?

☐ YES ☐ NO (fail) ☐ N/A

ALL LIFTS MAXIMUM LIFT VELOCITY/ACCELERATION/NOISE

	Horizontal: Velocity	Vertical: Velocity	Horizontal Acceleration:	Vertical Acceleration:	Noise (Public Use):
Unloaded					
Deploy/Unfold:	_____ mm/s	_____ mm/s	N/A	N/A	_____ dBA
Lower/Down :	_____ mm/s	_____ mm/s	_____ g	_____ g	_____ dBA
Raise/Up :	_____ mm/s	_____ mm/s	_____ g	_____ g	_____ dBA
Stow/Fold :	_____ mm/s	_____ mm/s	N/A	N/A	_____ dBA

Loaded

Lower/Down :	_____ mm/s	_____ mm/s	_____ g	_____ g	_____ dBA
Raise/Up :	_____ mm/s	_____ mm/s	_____ g	_____ g	_____ dBA

18. For the "Deploy" and "Stow" lift operations, is the velocity less than equal to 305 mm/s?

☐ YES ☐ NO (fail)

19. For the "Lower" and "Raise" lift operations, is the velocity less than equal to 152 mm/s?

☐ YES ☐ NO (fail)

20. For the "Lower" and "Raise" lift operations, is the acceleration less than equal to 0.3g (2.94 m/s²)?

☐ YES ☐ NO (fail)

21. For all PUBLIC LIFT operations, is the noise level less than equal to 80?

☐ YES ☐ NO (fail)

Backup Operation Notes:

Failure Notes:This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

□

Data Sheet 10: Fatigue endurance test

TEST DATE:_____ NHTSA NO.:_____ LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

ALL LIFTS MAXIMUM LIFT VELOCITY

	Horizontal Velocity:	Vertical Velocity:	Indicated Cycles	Actual Cycles
<i>Loaded</i>				
1 st Endurance:	_____ mm/s	_____ mm/s	_____	_____
2 nd Endurance:	_____ mm/s	_____ mm/s	_____	_____
<i>Unloaded</i>				
1 st Endurance:	_____ mm/s	_____ mm/s	_____	_____
2 nd Endurance:	_____ mm/s	_____ mm/s	_____	_____

Discussion of Time gaps, or pauses due to cycling, or temperature issues:

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

Evidence of separation, fracture, or breakage of any vehicle or lift component:

DATE: _____

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DATE: _____

DATE: _____

Data Sheet 12: Handrail test

TEST DATE: _____ NHTSA NO.: _____ LABORATORY: _____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

LIFT TYPE☐ PUBLIC ☐ PRIVATE**NOTE:** For the following measurements refer to **FIGURE D1**:

1. Is the vertical projection (horizontal extent of the handrail) (l) less than 203 mm apart?

☐ YES (Fail) ☐ NO

Vertical projection of graspable portion of handrail (l): _____ mm

Height of the graspable portion of the handrail (h): _____ mm

2. Is the vertical measurement (height) (h) less than 760 mm or more than 965 mm above the platform surface?

☐ YES (Fail) ☐ NO

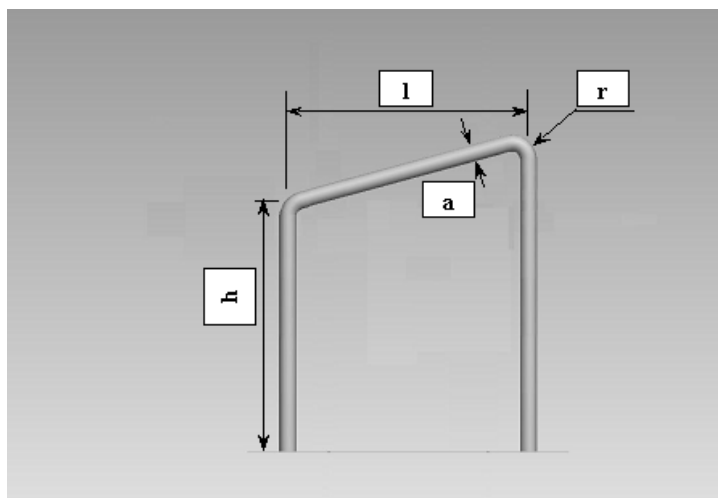
Cross section of the graspable portion of the handrail (a): _____ mm

3. Is the cross section less than 31.5 mm or more than 38 mm?

☐ YES (Fail) ☐ NO

Minimum radii of any graspable portion of the handrail (r): _____ mm

4. Is this radii less than 3.2 mm?

☐ YES (Fail) ☐ NO**FIGURE D1**

5. Does handrail position change relative to the platform surface when the platform is raised and lowered?

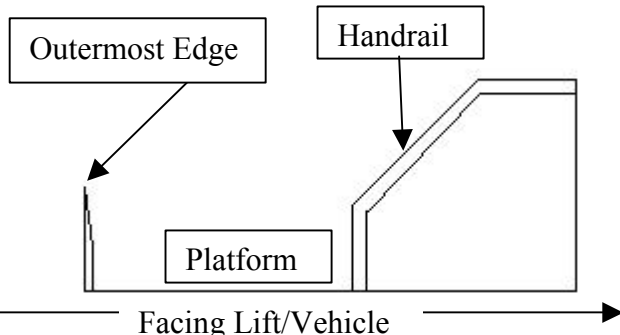
☐ YES (fail) ☐ NO

1st Force ApplicationHANDRAIL FORCE TESTSlack Adjustment Point and Handrail Reference Point:

(Measured from outermost edge of lift and lift platform reference planes)

Force Application Point (center of 1290 mm² area):

x: _____ mm y: _____ mm

Mark Orientation on
Cross Section with "X":1st Force ApplicationForce Application Point:

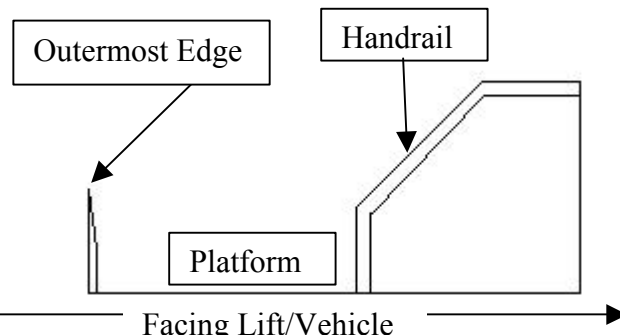
(Measured from outermost edge of lift and lift platform reference planes)

Handrail Reference Point (from above)

x: _____ mm y: _____ mm

Force Application Point (center of 1290 mm² area):

x: _____ mm y: _____ mm

Mark Orientation on
Cross Section with "X":

Applied Force: _____ N Displacement of the handrail relative to the reference point:

x: _____ mm y: _____ mm

Minimum clearance between handrail and nearest portion of vehicle (if so installed):

_____ mm

6. Is this clearance at least 38 mm?

☐ YES (fail) ☐ NO

7. Has permanent deformation resulted from the applied force?

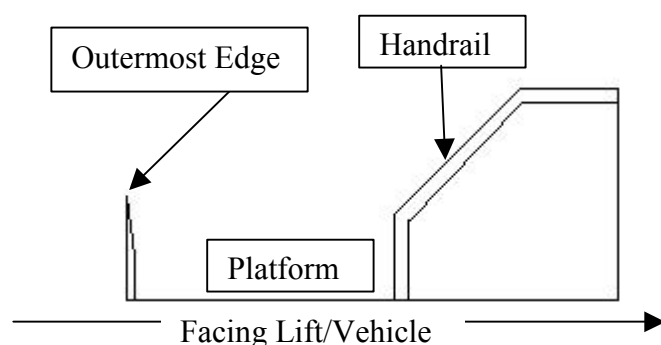
☐ YES (fail) ☐ NO

2nd Force Application**HANDRAIL FORCE TEST**Slack Adjustment Point and Handrail Reference Point:

(Measured from outermost edge of lift and lift platform reference planes)

Force Application Point (center of 1290 mm² area):

x: _____ mm y: _____ mm

Mark Orientation on
Cross Section with "X":

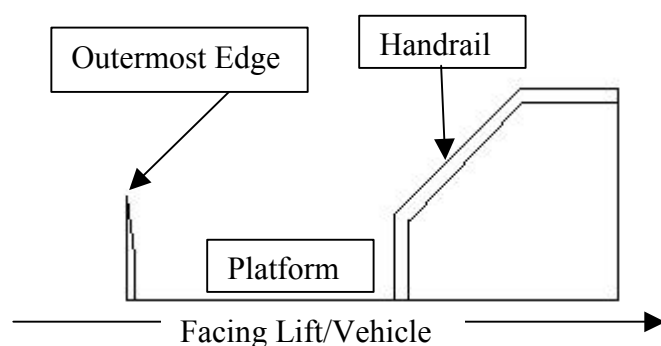
Facing Lift/Vehicle

Force Application Point:

(Measured from outermost edge of lift and lift platform reference planes)

Handrail Reference Point (from above)**x: _____ mm y: _____ mm**Force Application Point (center of 1290 mm² area):

x: _____ mm y: _____ mm

Mark Orientation on
Cross Section with "X":

Facing Lift/Vehicle

Applied Force: _____ N

Displacement of the handrail relative to the reference point:

x: _____ mm y: _____ mm

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DATE: _____

DATE: _____

Data Sheet 13: Wheelchair retention device overload test

TEST DATE: NHTSA NO.: LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

Wheelchair Retention Device

☐ OUTER BARRIER ☐ NON-OUTER BARRIER

Platform Surface Height: mm

Actual Load Applied _____ N

Evidence of separation, fracture, or breakage of any vehicle or lift component:

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.**Failure Notes:**[illegible]

RECORDED BY: _____

DATE: _____

APPROVED BY: _____

DATE: _____

1

Lift Make/Model: _____

Evidence of separation, fracture, or breakage of any vehicle or lift component:

This image shows a single sheet of white paper with horizontal blue ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.[illegible]

DATE: _____

Data Sheet 15: Photographic Documentation

TEST DATE:_____ NHTSA NO.:_____ LABORATORY:_____

Date of Manufacture: _____ S/N _____

Lift Make/Model: _____

1. The lift in the condition it was received (front, rear, and both sides)

☐ YES ☐ NO ☐ N/A

2. Certification label

☐ YES ☐ NO ☐ N/A

3. Lift installed in vehicle (if applicable)

☐ YES ☐ NO ☐ N/A

4. Stowed lift

☐ YES ☐ NO ☐ N/A

5. Deployed lift

☐ YES ☐ NO ☐ N/A

6. Vehicle floor level loading position

☐ YES ☐ NO ☐ N/A

7. Ground level loading position

☐ YES ☐ NO ☐ N/A

8. Ground level lift

☐ YES ☐ NO ☐ N/A

9. Vehicle owner's manual insert

9.1. Maintenance schedule

☐ YES ☐ NO ☐ N/A

9.2. Lift operating procedures

☐ YES ☐ NO ☐ N/A

Public Use Lifts

9.3. The statement “DOT-Public Use Lift” on the front cover

☐ YES ☐ NO ☐ N/A

9.4. The statement “*DOT-Public Use Lift*” verifies that this platform lift meets the “public use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, but must be installed on buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”

☐ YES ☐ NO ☐ N/A

Private Use Lifts

9.5. The dimensions that constitute the unobstructed platform operating volume for the lift.

☐ YES ☐ NO ☐ N/A

9.6. The manufacturer’s rated load for the lift.

☐ YES ☐ NO ☐ N/A

9.7. Information on whether a wheelchair user must back onto the platform from the ground level loading position due to the absence of an inner roll stop.

☐ YES ☐ NO ☐ N/A

9.8. The statement “DOT-Private Use Lift” on the front cover of the vehicle owner’s manual insert

☐ YES ☐ NO ☐ N/A

9.9. The statement “*DOT-Private Use Lift*” verifies that this platform lift meets only the “private use lift” requirements of FMVSS No. 403. This lift may be installed on all vehicles appropriate for the size and weight of the lift, except for buses, school buses, and multi-purpose passenger vehicles other than motor homes with a gross vehicle weight rating (GVWR) that exceeds 4,536 kg (10,000 lb).”

☐ YES ☐ NO ☐ N/A

10. Lift Installation Instructions

- 10.1. The vehicles on which the lift is designed to be installed by make, model, and year, or by specifying the design elements that would make a vehicle an appropriate host for a particular lift, and for which the platform lift manufacturer has certified compliance.

☐ YES ☐ NO ☐ N/A

- 10.2. Procedures for operational checks that the vehicle manufacturer must perform to verify that the lift is fully operational.

☐ YES ☐ NO ☐ N/A

- 10.3. Any informational material or labels that must be placed on or in the vehicle in order to comply with the requirements of this standard. Labels must be of a permanent nature that can withstand the elements of the outside environment.

☐ YES ☐ NO ☐ N/A

Public Use Lifts

- 10.4. The statement “DOT-Public Use Lift” on the front cover of the installation instructions

☐ YES ☐ NO ☐ N/A

Private Use Lifts

- 10.5. The manufacturer’s rated load for the lift.

☐ YES ☐ NO ☐ N/A

- 10.6. The statement “DOT-Private Use Lift” on the front cover of the installation instructions.

☐ YES ☐ NO ☐ N/A

S6.4 Platform Requirements

11. Inner Roll-Stop

☐ YES ☐ NO ☐ N/A

12. Outer Barrier

☐ YES ☐ NO ☐ N/A

13. Platform Surface

☐ YES ☐ NO ☐ N/A

14. Bridgeplate

☐ YES ☐ NO ☐ N/A

15. Threshold area

☐ YES ☐ NO ☐ N/A

16. Gap between the inner roll stop and the lift platform (w/ Test Fixture).

☐ YES ☐ NO ☐ N/A

17. Horizontal gap over which a passenger may traverse to enter or exit the platform (w/ Test Fixture).

☐ YES ☐ NO ☐ N/A

18. Unobstructed Volume (w/Test Fixture)

☐ YES ☐ NO ☐ N/A

19. Opening in platform surface (w/Test Fixture)

☐ YES ☐ NO ☐ N/A

20. Edges of the platform surface

☐ YES ☐ NO ☐ N/A

21. Visible edge of the vehicle floor or bridging device adjacent to the platform lift

☐ YES ☐ NO ☐ N/A

22. Designated standing area (if applicable)

☐ YES ☐ NO ☐ N/A

23. Lift Platform Outline Markings (Public Only)

☐ YES ☐ NO ☐ N/A

24. Lift light(s) (Public Only)

☐ YES ☐ NO ☐ N/A

25. Flashing Red Beacon

☐ YES ☐ NO ☐ N/A

26. Gap between the outer barrier and the lift platform (w/Test Fixture)

☐ YES ☐ NO ☐ N/A

27. Gap between the platform sides and edge guards (w/Test Fixture)

☐ YES ☐ NO ☐ N/A

28. Horizontal gap between the platform side and the vehicle structure (w/Test Fixture) if applicable

☐ YES ☐ NO ☐ N/A

29. Edge guards

☐ YES ☐ NO ☐ N/A

30. Platform Requirements Test failure(s)

☐ YES ☐ NO ☐ N/A

S7.3 Environmental Resistance Test

31. Test apparatus

☐ YES ☐ NO ☐ N/A

32. Lift attachment hardware

☐ YES ☐ NO ☐ N/A

33. “Upper” attachment hardware

☐ YES ☐ NO ☐ N/A

34. Attachment hardware ferrous corrosion (w/ Test Fixture)

☐ YES ☐ NO ☐ N/A

35. Assembled externally mounted lift and all associated attachment hardware

☐ YES ☐ NO ☐ N/A

36. Test device location on the threshold area.

☐ YES ☐ NO ☐ N/A

37. Environmental Resistance Test failure(s)

☐ YES ☐ NO ☐ N/A

S7.7 Wheelchair retention device impact test

38. Position of the forward most element of the test device on the platform before forward wheelchair retention impact test

☐ YES ☐ NO ☐ N/A

39. Position of the test device after forward wheelchair retention impact test

☐ YES ☐ NO ☐ N/A

40. Position of the rearward most element of the test device on the platform before rearward wheelchair retention impact test

☐ YES ☐ NO ☐ N/A

41. Position of the test device after rearward wheelchair retention impact test

☐ YES ☐ NO ☐ N/A

42. Digital video of Wheelchair retention device impact test

☐ YES ☐ NO ☐ N/A

43. Wheelchair retention device impact test failure(s)

☐ YES ☐ NO ☐ N/A

S7.8 Inner roll stop test

44. Pre-test footrest position

☐ YES ☐ NO ☐ N/A

45. Position of the forward most element of the test device on the platform before forward inner roll stop impact test

☐ YES ☐ NO ☐ N/A

46. Position of the test device after inner roll stop impact test

☐ YES ☐ NO ☐ N/A

47. Digital video of Inner roll stop test

☐ YES ☐ NO ☐ N/A

48. Inner roll stop test failure(s)

☐ YES ☐ NO ☐ N/A

S7.9 Static load test I—working load

49. Lift system control (fixed and/or pendant)

☐ YES ☐ NO ☐ N/A

50. Control panel face(s) including noise level measurement device

☐ YES ☐ NO ☐ N/A

51. Lift operating instructions

☐ YES ☐ NO ☐ N/A

52. Digital video of Static load test I—working load

☐ YES ☐ NO ☐ N/A

53. Static load test I failure(s)

☐ YES ☐ NO ☐ N/A

S7.10 Fatigue endurance test

54. Test Load on platform

☐ YES ☐ NO ☐ N/A

55. Lift cycle counter (if visible)

☐ YES ☐ NO ☐ N/A

56. Fatigue endurance test failure(s)

☐ YES ☐ NO ☐ N/A

S7.11 Static load test II—proof load

57. Test Load on platform

☐ YES ☐ NO ☐ N/A

58. Digital video of Static load test II—proof load

☐ YES ☐ NO ☐ N/A

59. Static load test II failure(s)

☐ YES ☐ NO ☐ N/A

S7.12 Handrail test

60. Handrails

☐ YES ☐ NO ☐ N/A

61. Digital video of handrail position with raise/lower operation of lift

☐ YES ☐ NO ☐ N/A

62. Area location and force application position of first slack take-up load

☐ YES ☐ NO ☐ N/A

63. Area location and force application position of first load

☐ YES ☐ NO ☐ N/A

64. Digital video of first force application

☐ YES ☐ NO ☐ N/A

65. Displacement of handrail (first force application)

☐ YES ☐ NO ☐ N/A

66. Clearance to vehicle (if applicable)

☐ YES ☐ NO ☐ N/A

67. Permanent deformation (if applicable)

☐ YES ☐ NO ☐ N/A

68. Area location and force application position of second slack take-up load

☐ YES ☐ NO ☐ N/A

69. Area location and force application position of second load

☐ YES ☐ NO ☐ N/A

70. Digital video of second force application

☐ YES ☐ NO ☐ N/A

71. Displacement of handrail (second force application)

☐ YES ☐ NO ☐ N/A

72. Evidence of cracking, separation, or fractures (if applicable)

☐ YES ☐ NO ☐ N/A

73. Handrail test failure(s)

☐ YES ☐ NO ☐ N/A

S7.13 Wheelchair retention device overload test

74. Platform above ground level loading position

☐ YES ☐ NO ☐ N/A

75. Wheelchair retention device

☐ YES ☐ NO ☐ N/A

76. Force application

☐ YES ☐ NO ☐ N/A

77. Evidence of cracking, separation, or fractures (if applicable)

☐ YES ☐ NO ☐ N/A

78. Digital video of Wheelchair retention device overload test

☐ YES ☐ NO ☐ N/A

S7.14 Static load test III—ultimate load

79. Platform at the vehicle floor loading position

☐ YES ☐ NO ☐ N/A

80. Load application

☐ YES ☐ NO ☐ N/A

81. Evidence of cracking, separation, or fractures (if applicable)

☐ YES ☐ NO ☐ N/A

82. Digital video of Static load test III

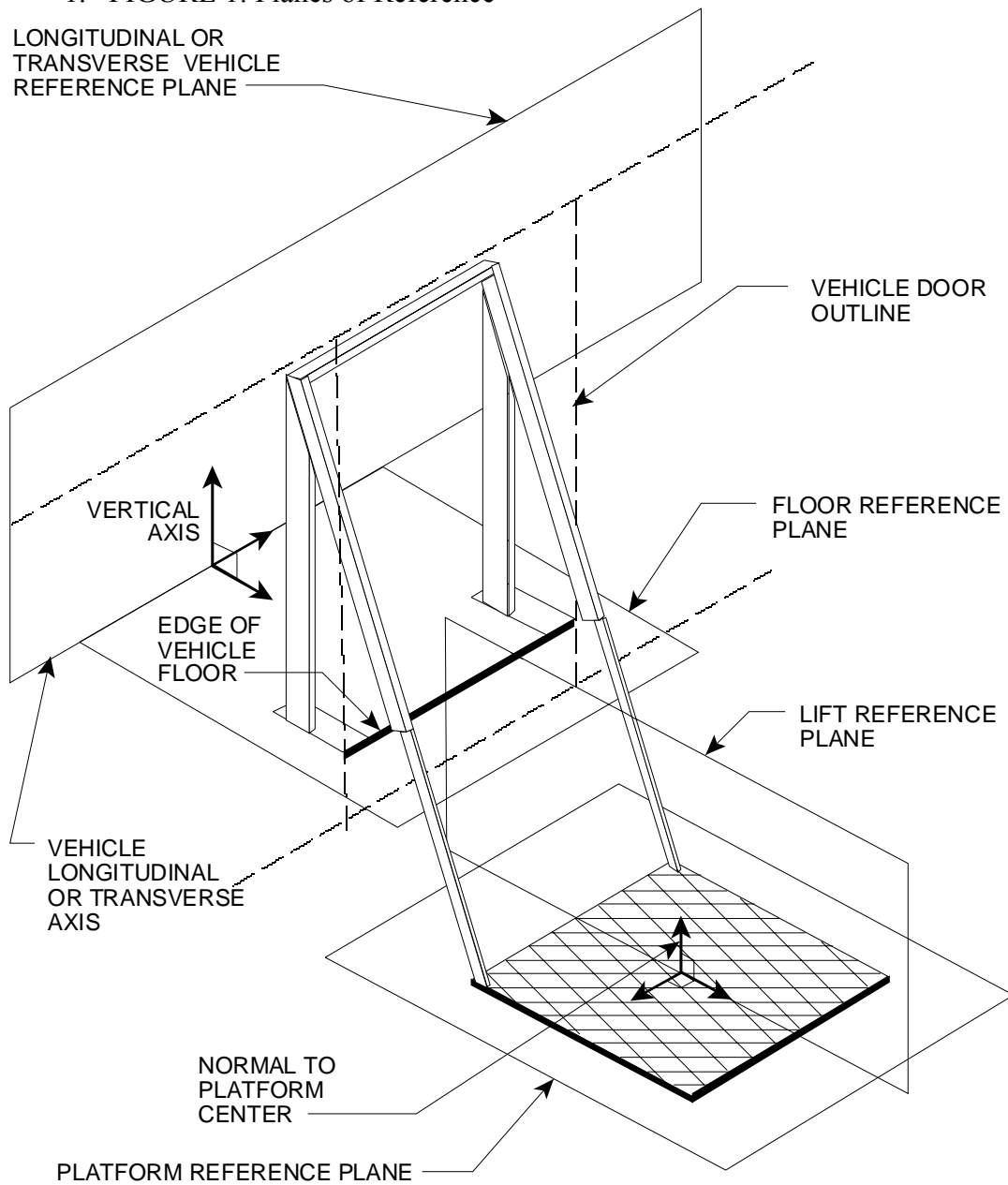
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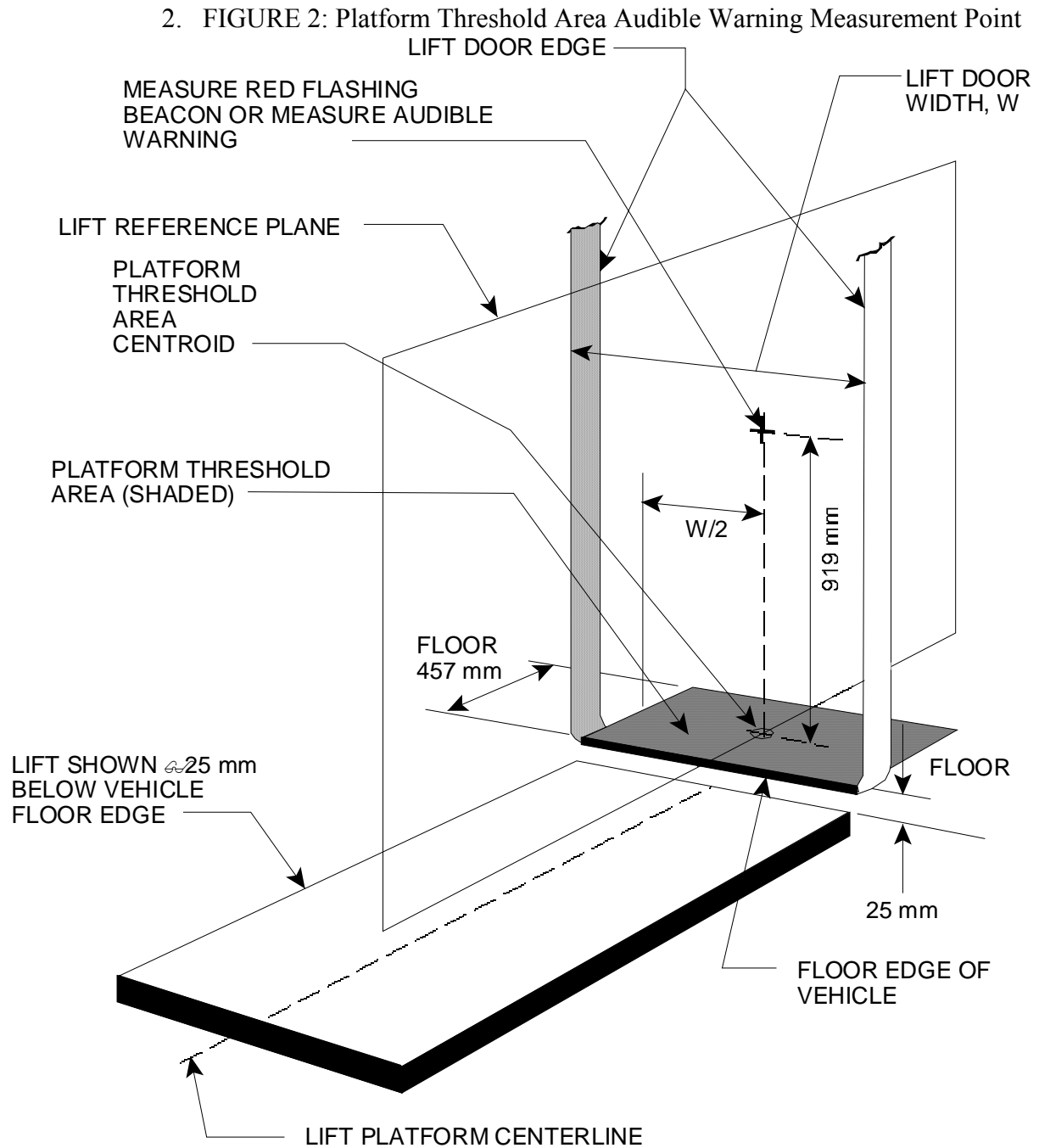
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APPROVED BY: _____

DATE: _____

17. LIST OF FIGURES**1. FIGURE 1: Planes of Reference**

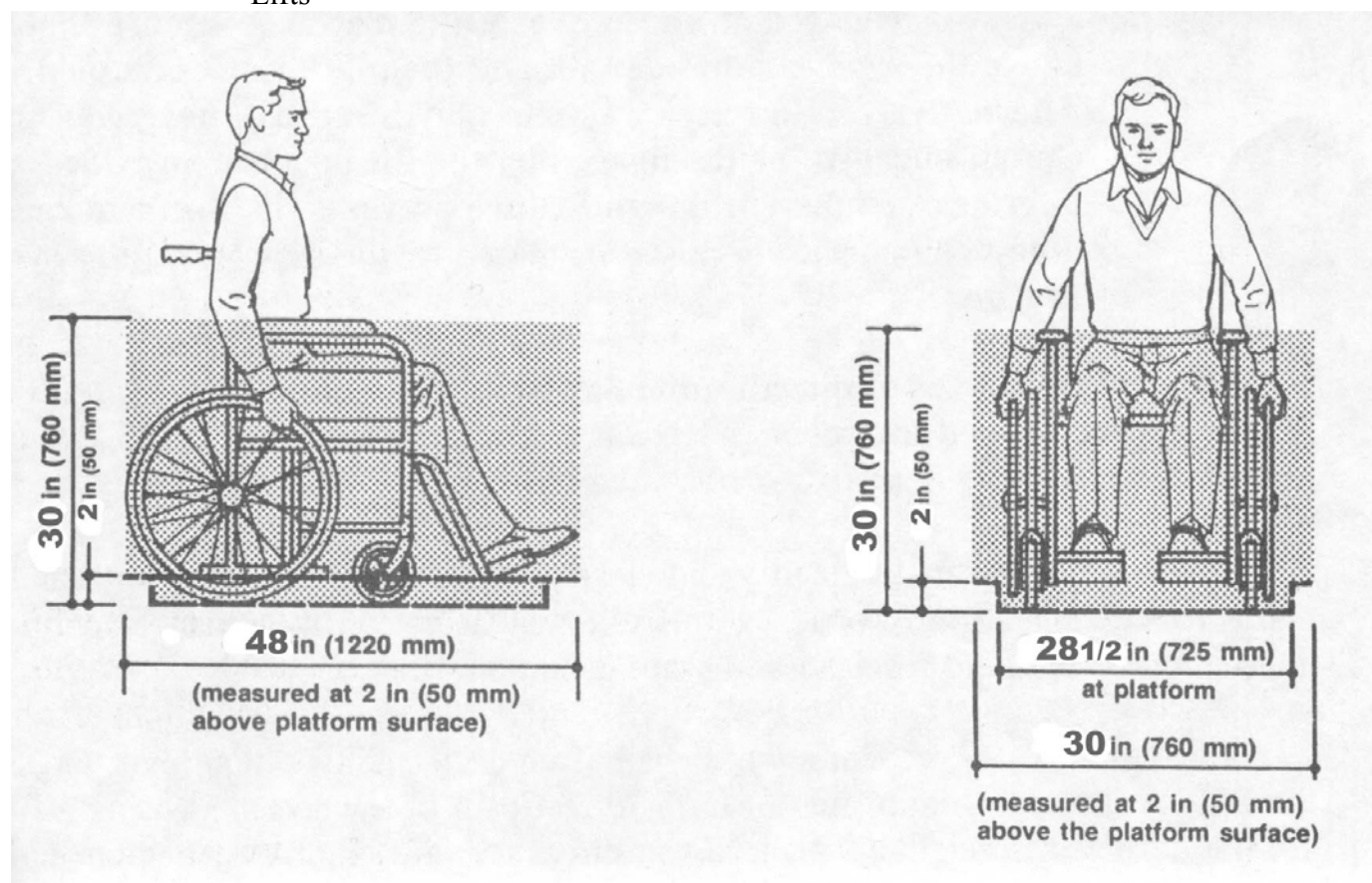
PLANES OF REFERENCE
FIGURE 1



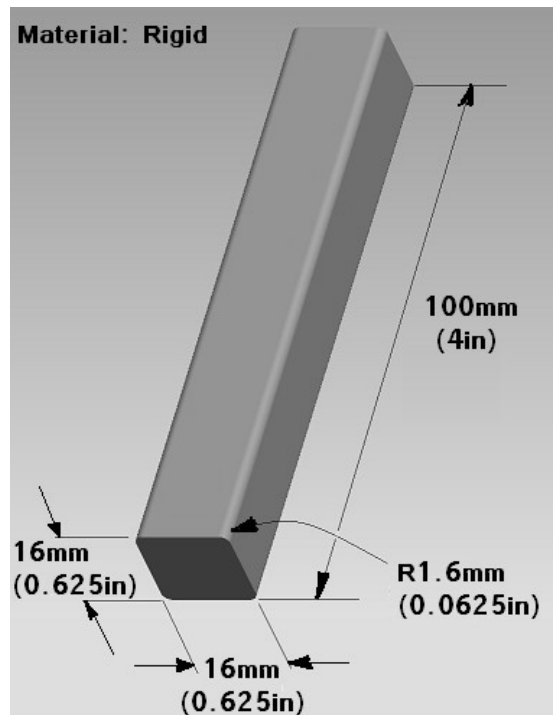
PLATFORM THRESHOLD AREA AUDIBLE WARNING MEASUREMENT POINT

FIGURE 2

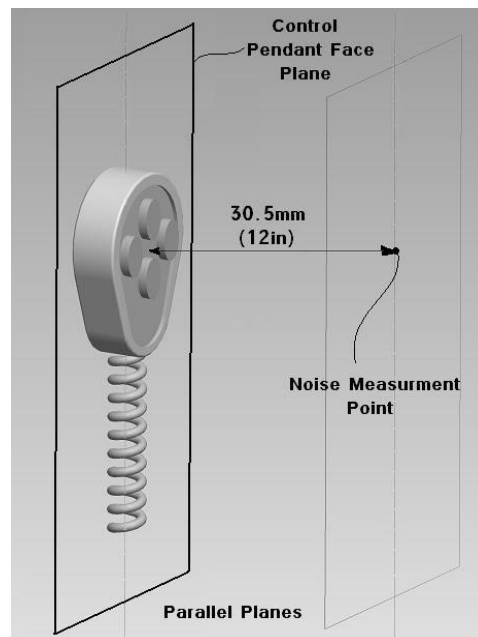
3. FIGURE 3: Minimum Unobstructed Platform Operation Volume for Public Lifts



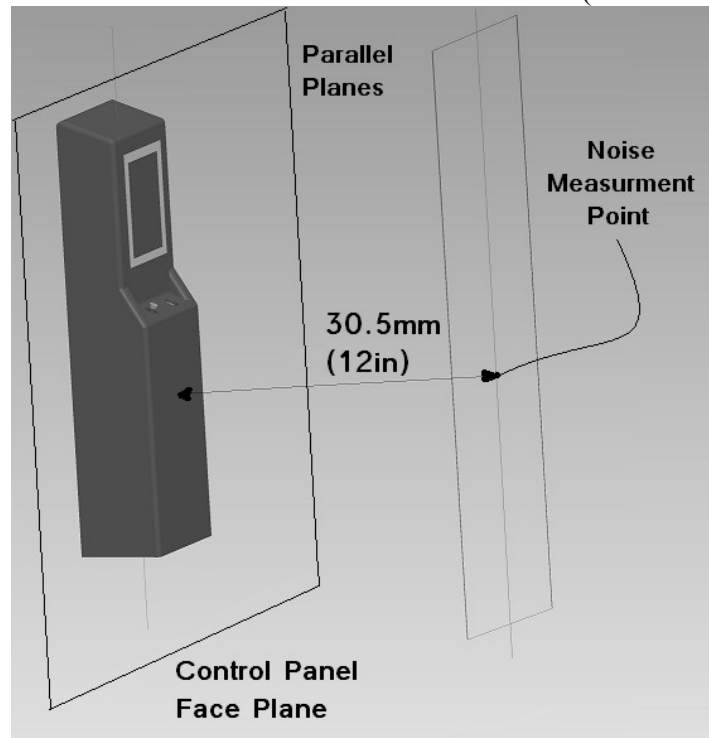
4. FIGURE 4: Clearance Test Block For Gaps, Transitions, and Openings



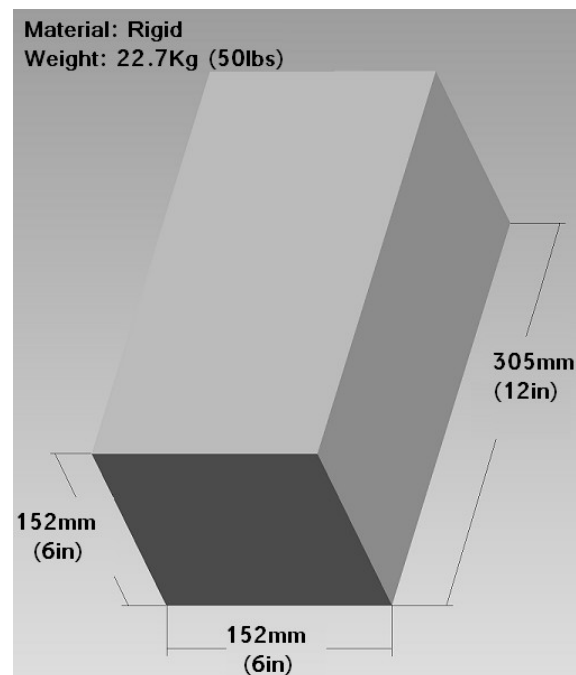
5. FIGURE 5: Lift Noise Measurement Location (Control Pendant)



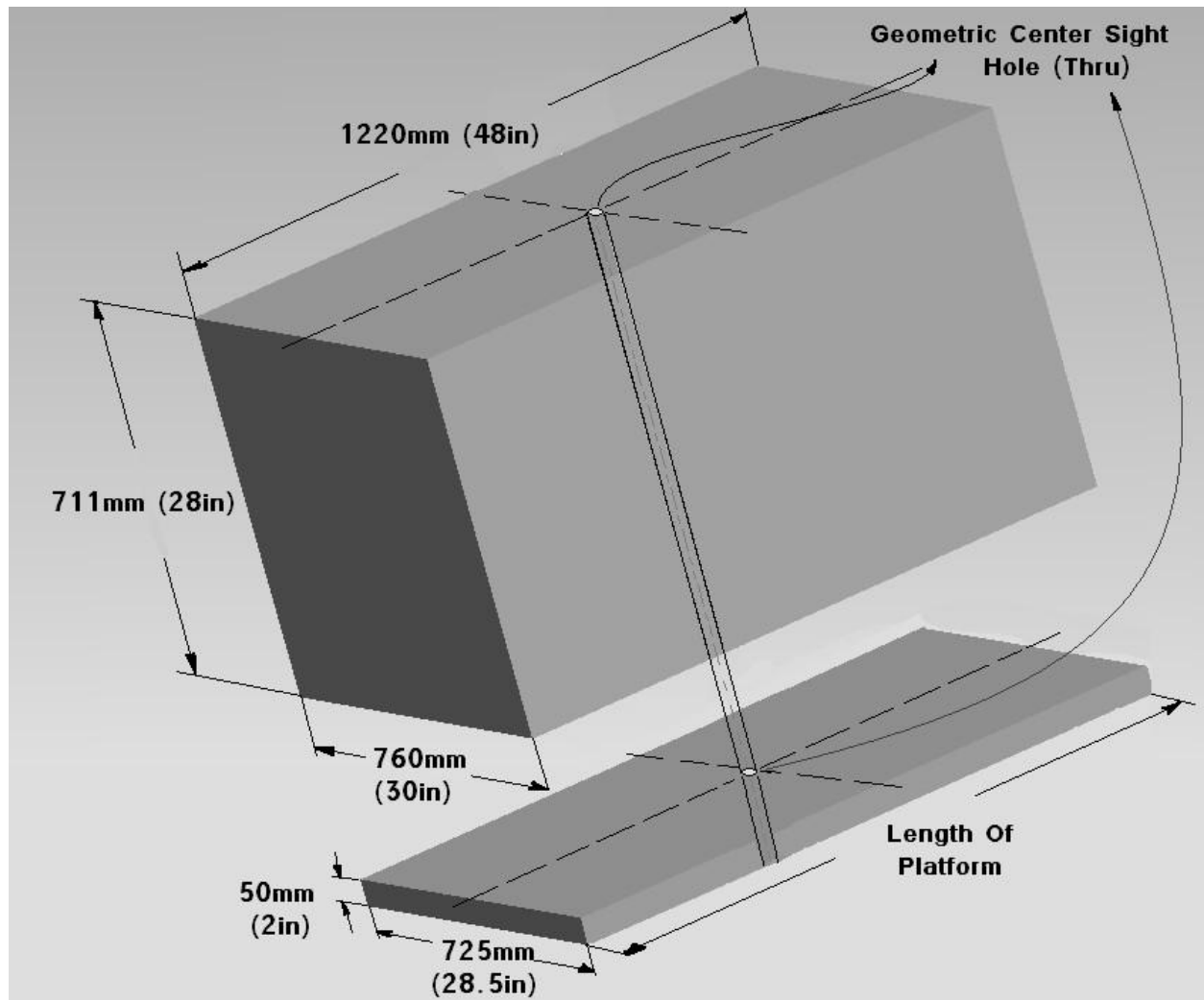
6. FIGURE 6: Lift Noise Measurement Location (Control Panel)



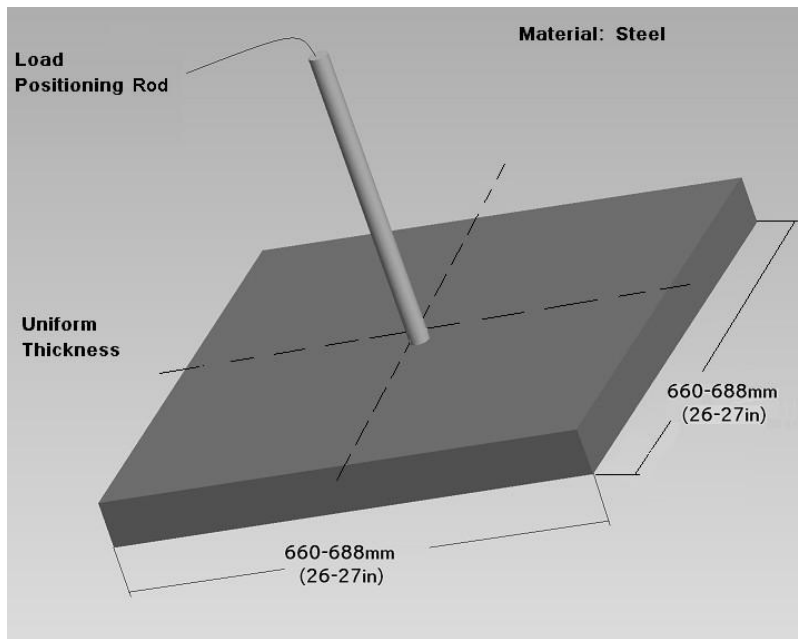
7. FIGURE 7: Rigid Box For Detecting Platform Occupancy



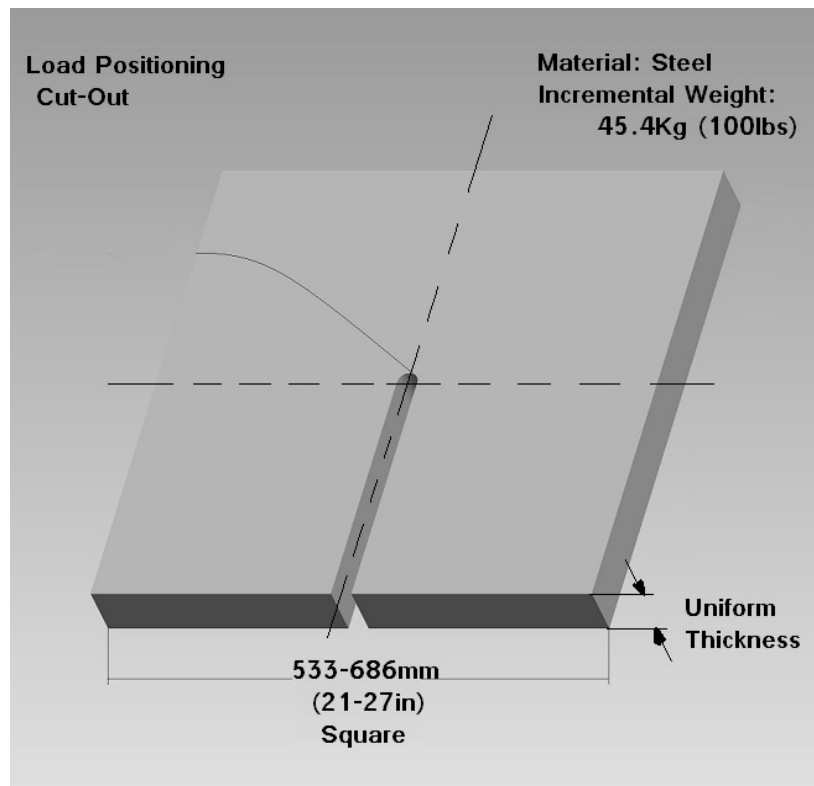
8. FIGURE 8: Unobstructed Platform Operating Volume Fixture Assembly



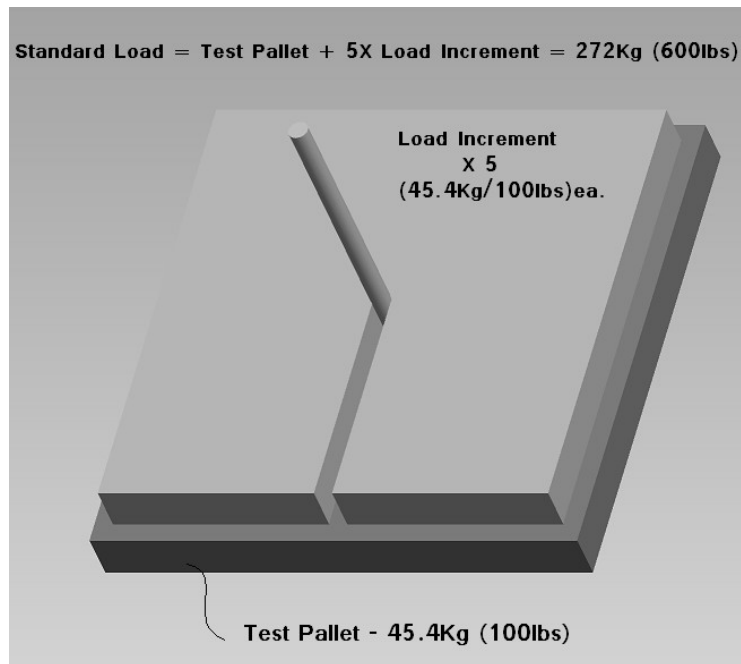
9. FIGURE 9: Test Pallet



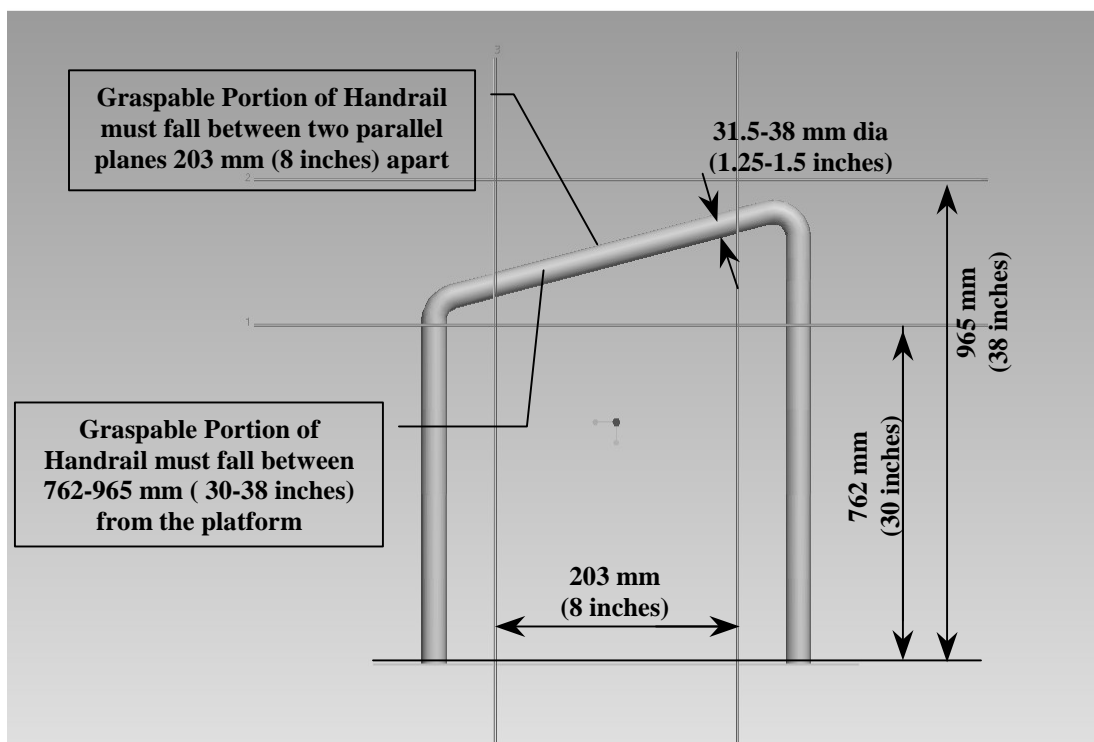
10. FIGURE 10: Test Pallet Load Increment



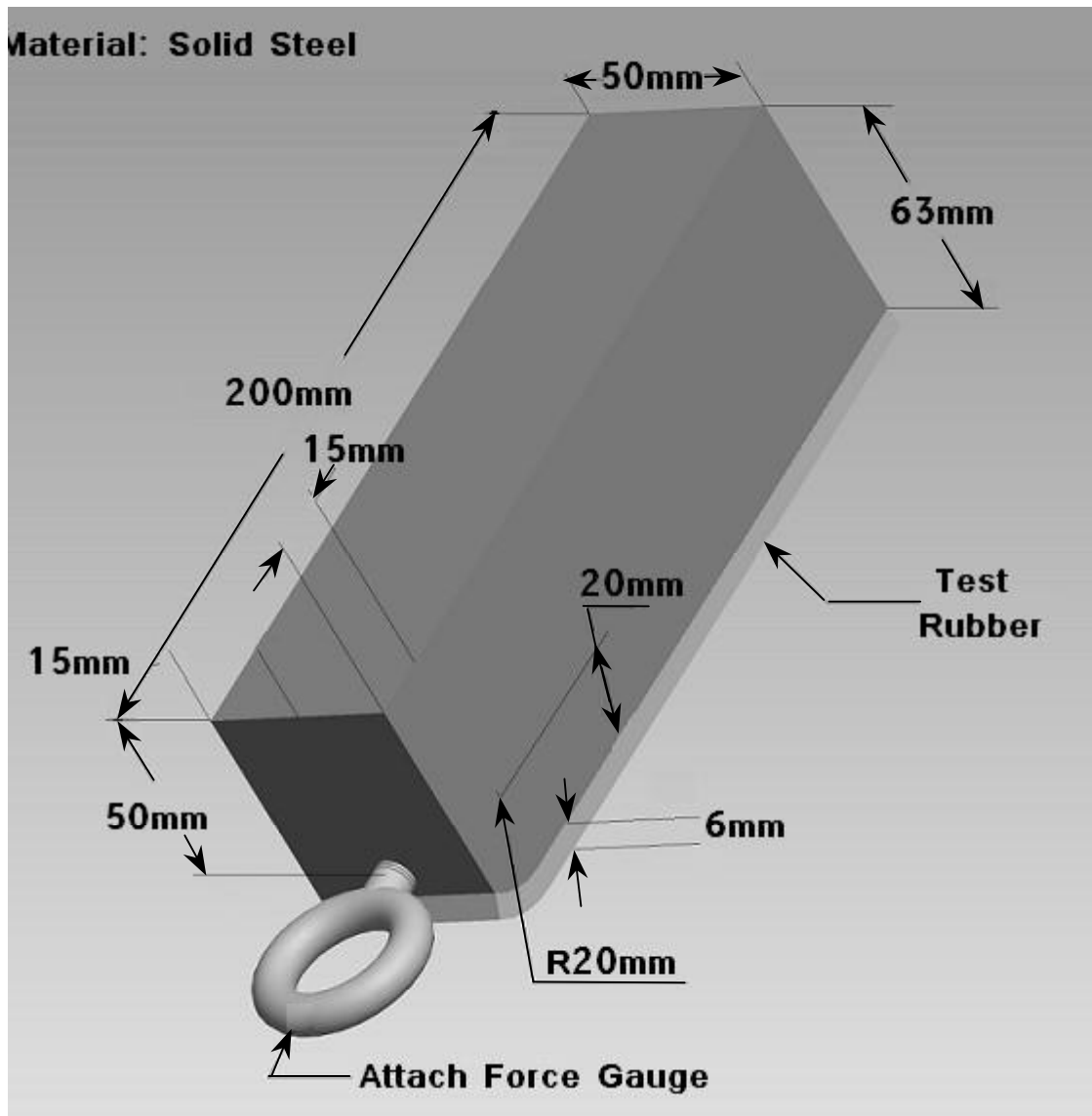
11. FIGURE 11: Test Pallet w/Standard Load



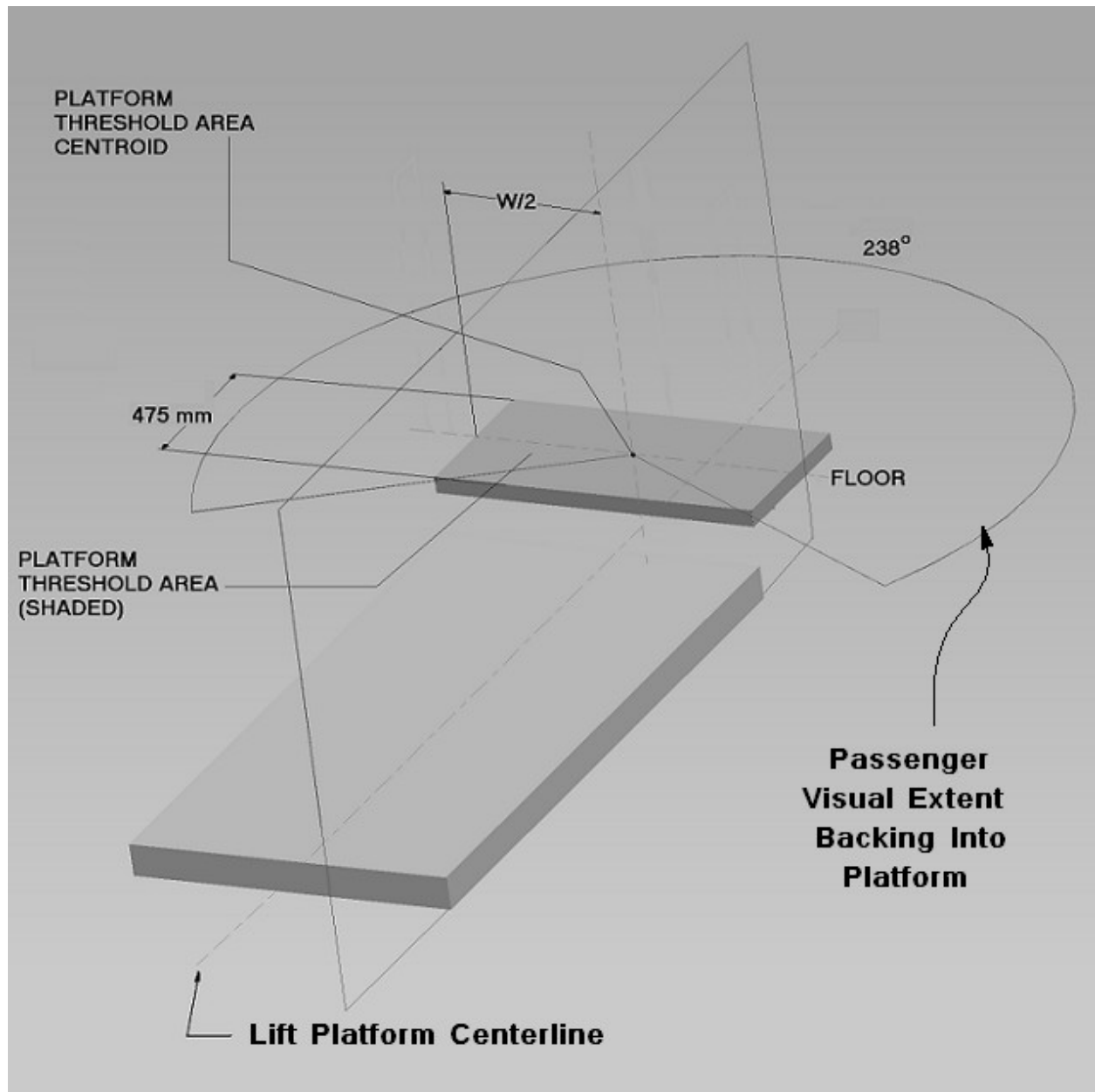
12. FIGURE 12: Handrail Requirements



13. FIGURE 13: Slip Resistance Test Block w/Rubber attached



14. FIGURE 14: Passenger Viewing Extents of Visual Warning Signal



15. FIGURE 15: Light Measurement Locations

